THESIS

FOR THE AWARD OF DEGREE OF

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STUDY OF COMPARISON OF CAUSES OF RECURRENT ABDOMINAL PAIN DUE TO ORGANIC OR FUNCTIONAL CAUSES IN CHILDREN (4-18 YEARS): A CASE-CONTROL STUDY

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LIST OF ABBREVIATIONS

1	RAP	Recurrent abdominal pain
2	WHO	World Health Organisation
3	FGID	Functional Gastro Intestinal Disorders
4	FAPD	Functional Abdominal Pain Disorders
5	TB	Tuberculosis
6	NORAP	Non - Organic Recurrent Abdominal Pain
7	ESR	Erythrocyte Sedimentation Rate
8	CBC	Complete Blood Count
9	GI	GastroIntestinal

Introduction

INTRODUCTION

Recurrent abdominal pain (RAP), which can afflict up to 10-20% of school-aged children, is highly prevalent.[1]According to Robin et al. (2018), using Rome IV criteria, the prevalence of RAP was 24.7% in children aged 0 to 3 and 25% in children aged 4 to 18 years[2].

Although most recurrent abdominal pain is categorized as functional (non-organic functional pain), an organic etiology is discovered in 5% to 10% of instances.[2]

RAP is not diagnostic; rather, it is more symptom-based. Functional abdominal pain is defined as recurrent abdominal pain that is unrelated to any anatomical, metabolic, infectious, inflammatory, or neoplastic illnesses.

In actual practice, FGIDs are quite prevalent, accounting for more than 50% of pediatric gastroenterologists' consultations and 2-4% of pediatric doctor visits.

Recurrent Abdominal Pain in children is defined as at least three episodes of pain that occurs over at least three months and affects the child's ability to perform normal activities. [3]

It is possibly the most common painful health problem In school-going adolescents[2]. Even though a lot of work has been done to understand the causative associations and the pathophysiology of recurrent abdominal pain in children, most of this has been done in the west. Studies related to this topic are inadequate, especially in an Indian setup.

Over the years the prevalence of recurrent abdominal pain is increasing. The growing number of children with functional abdominal pain disorders (FAPDs) has been implicated in changes in children's lifestyles, including lower physical activity levels, increased consumption of sweets, sweetened beverages, and junk food & higher stress[3,4].

Most studies have focused on gender, age, genetic factors, and psychosocial factors[1], few have explored the relationship between diet & obesity. The majority of studies focus on symptoms found in children labeled as suffering from NORAP.

Rome IV criteria, which gives data that does not correspond with data of ROME III Criteria as it is done in previous studies, was introduced in 2016 for the purpose of advancing information and improving understanding of childhood FGIDs.[5]

Paediatric RAP is a serious issue that adversely affects children's health, school performance, emotions, and perception of their own fitness and health.

The issue can get worse for parents, patients, and doctors if an excessively lengthy search for an organic disease is conducted at the expense of careful assessment, engagement, explanation, and review.

severe /frequent RAP episodes can cause a child to miss out on school, and disrupt family activities, hence it is essential to make a definite diagnosis and manage the disease.

Determining if there is an organic or nonorganic basis for a child's recurring episodes of stomach pain has traditionally been the standard course of treatment.

To decide if an organic or nonorganic cause is present, a diagnostic workup should be performed. This includes simple laboratory tests such as complete blood count, erythrocyte sedimentation rate, and urinalysis for infection, inflammation, or urinary tract infection.

The main management objectives for all forms of RAP in children are to enhance the quality of life and lesser pain-related impairment rather than completely eliminate pain. Support and reassessment should be offered to the parents the better management of RAP.

Only a few studies have been done regarding the effect of various parameters like gender, diet, and obesity on recurrent abdominal pain in Indian setup. Till date, no study on recurrent abdominal pain has been carried out in Ghaziabad Uttar Pradesh.

To fill this gap, the present study was carried out on school-going children coming to OPD in Santosh medical college and hospital Ghaziabad Uttar Pradesh.

Aims & Objectives

AIMS AND OBJECTIVES:

AIM

To compare the causes of Recurrent Abdominal Pain due to organic or functional causes in children (4-18 years)

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OBJECTIVES

1. To know the association of Recurrent Abdominal Pain with age, BMI and physical activity of children.

2. To understand the significance of Red Flag signs in Recurrent Abdominal pain.

3. To compare the dietary habits between cases and control and to understand the association of diet with Recurrent Abdominal Pain.

Review of Literature

REVIEW OF LITERATURE

RAP is defined as **three or more episodes of abdominal pain occurring over a period of at least three months, with pain sufficient to cause some impairment of function[6].**

The original definition of RAP, published in 1958, includes both organic and non-organic pain.

RAP may result from organic or non-organic causes. In 5% to 10% of kids with RAP an organic etiology is identified[9].13.5% of children globally are projected to experience functional abdominal pain[1].

It is generally accepted that the suffering that children with RAP indicate is real and not just an act of socialization or a way to skip school.

The most typical symptom is periumbilical pain, which is frequently accompanied by additional symptoms like headache, joint pain, and limb pain[7,8] as well as autonomic and functional symptoms like nausea, vomiting, and pallor. RAP may therefore initially resemble any acute abdominal disease, necessitating thorough examination and pointless intrusive tests.

The causes of stomach pain are numerous, and no single condition can account for all of them. 90% of children with this issue do not exhibit organic disease, according to Apley and Naish[9.] Recent developments and novel diagnostic methods have increased our knowledge and comprehension of the pathophysiology of RAP.

In 1958, Apley and Naish characterized recurrent stomach pain and conducted a field survey of 1000 school-age children, coming to the conclusion that the incidence of recurrent abdominal pain is considerable, particularly in certain age groups and notably in girls. The significant prevalence of abdominal pain and a few other ailments in the families of impacted children was also determined[3] .

Similarly in 1970 Stone RT, Barbero GJ performed another study on recurrent abdominal pain in childhood to understand better nature of the disease[10].

A study done by NishanWadhwa and Sibal in 2007 on recurrent abdominal pain among children attending government and private schools in Delhi studied the age group which had the maximum cases of RAP and the chronicity of symptoms associated with it[11].

The prevalence of recurrent abdominal pain has been rising over time, thus numerous research has been carried out over many years to aid in improving disease diagnosis and learn more about the nature, origin, and chronicity of symptoms associated with it.

Risk Factors-

1. **Age -**The majority of research has revealed a higher incidence of RAP in children between the ages of 5 and 14 and has demonstrated a decline in RAP with advancing age. Reduced prevalence rates with age are most likely caused by RAP's spontaneous resolution throughout time.

2. **Gender**- The risk of developing RAP is not clearly associated with gender. Levels of sex hormones may be involved, according to theories prompted by the rising incidence among girls.

Both the experience of visceral pain and the vulnerability to stress can be affected by ovarian hormones. Studies that claim to illustrate gender differences often fall short. Though it is still unknown exactly what sex does in RAP.

RAP is present in 10-12% of school-aged children, with a predominance of females[3]. In Malaysian school children, RAP was researched by Boey and his colleagues, and a prevalence of 10.2% (urban 8.2-9.6%, rural 12.4%) was found[4,12].

Rasul and Khan's study in Bangladesh found that 11.5% of school-age children have RAP[13]. In Sri Lanka, the prevalence of RAP is 10.5%[14]. RAP most frequently affects children between the ages of 5 and 14. Boys are less likely to be harmed than girls (relative prevalence 1.5).

Abdominal pain was reported by 75% of all students, occurring at least weekly in 13 and 17% of them, respectively, and severe enough to interfere with activities in 21% of them, according to a 1996 study by Hyams et al.[7]

It Involved 507 middle school and high school students (mean age, 13 and 16 years, respectively). Oyster[15] discovered in a community of 11 Danish people Introduction with a peak age of 9 years for both sexes: females 30%, boys 21%, 1 people 6 to 19 years old, 14% of the students responded positively when questioned about abdominal pain (girls 17%, boys 12%) using bowel disease questionnaire.

In a Finnish study of 2292 students in the first and third grades, aged 6 to 10, stomach pain occurred in 7% of the first grade and 5% of the third grade [17.] The prevalence is the same in non-Western regions of the world: in 1549 school-aged Malaysians from both rural and urban areas, 10% appeared to meet the RAP (Apley criteria) requirements.[18]

RAP is thought to be the subject of 5% of all outpatient visits to paediatricians[19]. Although many authors use Apley's definition of recurrent abdominal discomfort, the inclusion criteria are frequently changed, making it impossible to compare prevalence data.

3. **Obesity**- Recent research has demonstrated the link between obesity and persistent abdominal pain. Obesity and stomach pain have been found to be related.

According to Phatak and Pashankar's analysis (Compared to children of normal weight, obese/overweight children had a greater prevalence of RAP(FGID)[20]. They emphasized that being overweight or obese was a risk factor for RAP.

The psychosocial, emotional, and behavioral problems that are widespread in obese and overweight children and hence are accountable for more FGIDS are, in our opinion, the two key elements that play a major part in the higher incidence of FGIDs in obese/overweight children.

Importantly, when compared to children of normal weight, obese and overweight children were considerably more likely to have at least one FGID (P 0.001; Figure 1). According to regression analysis, there was an association between having at least one FGID and being obese or overweight (P = 0.001, odds ratio 1.983, 95% confidence interval)[20].

The obesity prevalence in Phatak and Pashankar is 27% which is higher than reported by the Centre for disease control in children[21].

Another study by Bonilla et al.[22] revealed a connection between the symptoms of recurrent abdominal discomfort and obesity. The study discovered that patients with recurrent abdominal discomfort had an obesity frequency of 20.2%.

Teitelbaum et all [23] in their study conducted on as the association of obesity with multiple functional abdominal diseases concluded that, the patients with GI complaints were significantly more obese compared with the age- and sex-matched local control.

A survey performed by Malaty et all [24] on 925 school-going children in association with obesity and recurrent abdominal pain revealed a greater percentage of obese children than nonobese children reporting abdominal pain (33% vs 22.5%).

Childhood obesity and FGIDs are significantly related, according to epidemiological research that has been done. Establishing a link between obesity and FGIDs can help

identify pathogenic pathways and perhaps even guide preventive therapy. The study also found a strong correlation between the persistence of GI symptoms at long-term follow-up and obesity.

Also. When compared to non-obese individuals, obese patients had more severe and frequent stomach pain, as well as greater rates of school absence and disruption of daily activities [23].

4. **Physiological factors-** It is a significant risk factor for the onset of recurrent abdominal pain mainly the nonorganic cause. They include aberrant personality features, psychological tension, excessive concern, anxiety, and sadness.

Furthermore, investigations on adults have demonstrated that these elements contribute to the continuation of recurrent abdominal pain throughout adulthood**.**

It has long been known that the RAP experience and the psychological health of the parent and child are related.

Walker et al. expanded on these findings by demonstrating that children with RAP were less confident in their capacity to manage daily stress than children in the Control group. Also, they were less likely to employ accommodating coping mechanisms including accepting the stressor event [25].

These findings are in accord those of Kaminsky and colleagues, who studied a direct relationship between depressives symptoms and coping methods in children with RAP and an inverse relationship between those symptoms and self-efficacy and social support [26]. They summed up by saying that kids who can cope with suffering in a healthy way are less likely to feel depressed.

Campo and colleagues compared mothers of children with FAP to those whose children did not have recurrent pain [27]. Mothers of FAP children were more prone to have anxiety, and depression and were also fitting with the observation done by Levi et al . It

was found that children with recurrent abdominal pain are most likely to have a maternal history of anxiety and depression [28].

In a recent study done in 2018 by yeluri on recurrent abdominal pain in children attending Paediatric OPD, it was observed that psychological symptoms mostly noted were sleep disturbances, headache and poor quality of life.

Yeluri reported that headache, disturbance in sleep, and interference in daily activity was common in children with the non-organic cause of RAP at 78%, 60%,and 54% [29].

School absenteeism was also present in these children suffering from recurrent abdominal pain.

5. **Diet** – RAP disorders are significantly influenced by diet. Many different food products, including some carbs and lipids, are regularly linked to GI issues, such as recurring stomach pain. There is some evidence to support the idea that eating more fried and spicy food increases the risk of RAP [30].

RAP is caused by a poor diet and inadequate hydration. Recently, dietary changes to treat recurring abdominal discomfort have drawn a lot of attention because it has been realized that many IBS patients report that certain foods seem to trigger or aggravate their symptoms.

Today, a variety of dietary regimens are being recommended to treat IBS symptoms, including those that cut out carbs, fermentable foods, gluten, and things that could trigger food-related antibodies.

Based on both biological plausibility and confirmation from prospective trials showing improvement in symptoms in roughly 75% of patients the low-Fermentable Oligosaccharide, Disaccharide, Monosaccharide and Polyol diet was created at Monash University in Australia by Dr. Peter Gibson and Susan Shepherd. It is now a popular treatment for IBS symptoms.

Children with RAP consumed less total fiber than the control group (13.4 g/day) (P=0.008), according to cross-sectional research of 41 children with RAP and 41 children in a control group in Brazil.

Fiber supplements and placebos were examined in two studies with 83 participants for a Cochrane review. Supplementing with fiber did not appear to have a significant positive effect; the pooled odds ratio for improvement with treatment was 1.26 with broad confidence ranges [33].

A recent meta-analysis of three randomized controlled trials (RCTs) that compared the use of dietary fiber supplements with a placebo for AP-FGID in kids (aged 5 to 17 years) found no support for high fiber supplementation as a dietary modification.

This is often tried in clinical practice and may be beneficial in some children. An exclusion diet may be tried in cases where the history is convincing for food allergies. To ensure that the general nutritional balance of the food is maintained, this should be carried out under the supervision of a qualified paediatric dietitian. A Cochrane review (which included two studies) compared a lactose-containing diet with a lactose-free diet in 90 participants, but the manner the data were presented prevented any conclusive inference on its effectiveness.[34]

The low FODMAP diet consists of a 6-week intensive elimination phase followed by a structured reintroduction phase if symptoms have decreased substantially.[31]

With a mean follow-up of 15.7 months, the efficacy of a low FODMAP diet on 90 children with IBS was studied prospectively using a symptom questionnaire; participants reported a significant improvement in diarrhea, bloating, and stomach discomfort while on the diet.[34]

In children with FD, it is advised to avoid non-steroidal anti-inflammatory medications and meals that may exacerbate symptoms (such as caffeine, hot, and fatty foods). AM's behavior might be affected by avoiding foods high in amine, caffeine, and nitrites.

6. **Genetic, Epigenetic, and Environmental factors-** Studies in adults have noted that patients with IBS are more likely to have a family history of similar illness or other bowel symptoms than controls[35].

Similar to this, twin studies have revealed that monozygotic twins are more likely than dizygotic twins to experience IBS [36] with a concordance rate of 17.2% in monozygotic twins and 8.4% in dizygotic twins [36]. The result was significant, but if genetic variables are a key component, one might anticipate a higher concordance rate among monozygotic twins. Therefore, it is probable that social and environmental factors, in addition to genetic vulnerability, play a significant role in the development of IBS.

McGowen and colleagues provided one of the most compelling illustrations of how epigenetic influences might change the genetic function that predisposes people to FAPDs. They compared the post-mortem hippocampus specimens of suicidal individuals with a history of child maltreatment to suicidal victims without such a history. They effectively demonstrated how the epigenetic modification (cytosine methylation) of an NR3C1 promotor of the neuron-specific glucocorticoid receptor results in a decrease in its expression. As a result, the negative feedback system becomes ineffective and the HPA axis becomes more active, which increases the risk of FAPDs in abused people [37].

All prenatal stresses, postnatal complications, other environmental factors, negative life events, and abuse exposure can affect gene expression and protein synthesis through these epigenetic mechanisms, which may then affect gut motility, pain perception, and

microbiota expression, potentially altering how the specific type of FAPD manifests in children and causing symptoms.

RAP is a symptom, not a diagnosis, so we should thoroughly examine the patients before making any inferences about the cause.

RAP causes can be majorly divided into organic and functional causes. In many studies done and written functional abdominal pain is considered same as RAP but that is not the case.

Apley et al. found in a study that "A proper diagnosis must include both evidence supporting an emotional disorder and reasonable proof against an organic condition. These two aspects of the diagnosis must be complementary. With very few instances, the organic disease can only be ruled out via a carefully taken history." It is necessary to rely on both, not just one [2].

More research has corroborated what Di Lorenzo et al. stated in their evidence-based report: It is not really possible to differentiate between organic and functional causes of pain totally on information from the history and physical examination of the patient. As a result, it stands to reason that the diagnosis of “functional abdominal pain” can only be made after the absolute elimination of organic causes.[38]

Organic diseases that could be the cause of recurrent abdominal pain are listed below.

Organic causes of Recurrent Abdominal Pain[39,40]

Gastrointestinal	Genitourinary	Metabolic	Others
Celiac disease	Endometriosis	Adrenal Crisis	Lead Poisoning
Constipation	Menstrual Cramps	Diabetic Ketoacidosis	Immunoglobulin E-mediated Food Allergy
Eosinophilic Esophagitis	Ovarian Cyst	Porphyria	Anterior cutaneous nerve entrapment
Gastroesophageal Reflux Disease	Pelvic Inflammatory Disease		Polyarthritis nodosa`
Inflammatory Bowel Disease	Ureteropelvic junction obstruction		Sickle Cell Disease
Pancreatitis	Testicular Pain		Pneumonia
Peptic Ulcer	Urolithiasis		Lymphoma

Bansal et al [41] in their study on children with RAP found 47% of children to have organic causes such as Giardiasis, UTI, worm infestation, or amebiasis.

Bandyopadhyay and Mondel in their study revealed that 88% of patients have been affected by RAP due to organic causes where the most common cause was parasitic infestation (76%), Urinary tract infection (8%), gastroesophageal reflux disease (2%), abdominal TB (1%) and cholelithiasis (1%) were the other causes.[42]

Red Flag Signs In Children with Recurrent Abdominal Pain[43]:-

1. Dysphagia
2. Odynophagia
3. Persistent vomiting
4. Gastrointestinal bleeding
5. Persistent right upper or right lower quadrant
6. Nocturnal diarrhea
7. Perirectal disease
8. Involuntary weight loss
9. Deceleration of linear growth
10. Delayed puberty
11. Unexplained fever
12. Arthritis
13. Family history of inflammatory bowel disease, celiac disease or peptic ulcer disease.

Although the presence of "red flag" symptoms does not exclusively indicate an organic pathology for RAP, the absence of the alarm symptoms increases the likelihood of AP-FGID. It is therefore important that if any or a combination of the "red flag" symptoms are reported child who fits the criteria for AP-FGID, appropriate investigations are necessary to exclude an underlying organic condition so that they can be treated accordingly.

If there are no such findings and the investigation for the patient does not show any abnormal results and the underlying pathology is not defined then it is thought to be a functional component or Non - organic cause of Recurrent Abdominal Pain.

NON-ORGANIC RECURRENT ABDOMINAL PAIN:

Functional abdominal discomfort, not otherwise specified (FGID) . This has been defined by the Rome IV criteria for FGIDs and is characterized by a collection of criteria, all of which should be met at least four times per month for at least two months before the diagnosis is made:

1) Periodic or ongoing abdominal pain that does not only occur during physiological processes (such as menstruation or eating); 2) Insufficient criteria for abdominal migraine, functional dyspepsia, or irritable bowel syndrome; and 3) After a thorough evaluation, the abdominal pain cannot be fully explained by another medical condition.

The worldwide pooled prevalence of functional abdominal pain in children is 13.5%.

Functional dyspepsia, irritable bowel syndrome (IBS), functional abdominal pain-not otherwise described, and abdominal migraine are subtypes of functional abdominal pain disease.

Children frequently suffer from functional stomach pain. As there is no underlying organic pathology, it is an abdominal pain that is distinct in origin.

The most prevalent subtype of functional abdominal pain is functional abdominal pain not otherwise described, which is followed by irritable bowel syndrome.

The Rome IV criteria classify gastrointestinal (GI) illnesses into a number of categories, some of which include functional nausea and vomiting or functional defecation disorders [44]. Functional abdominal discomfort is one of these categories.

Mavromichalis et al in their study have demonstrated that organic causes constitute 93% of the study group.

Romanezuk, et al found that 89% of the children in their study group had one or the other organic cause for their RAP while only 11% had psychogenic abdominal pain.[45]

Kumar et al found that 85% of the patients has affected due to organic causes of RAP.[46]

Similarly Balani et al found an organic cause in 74.2% of children with RAP in their study. [47]

DIAGNOSTIC WORKUP-

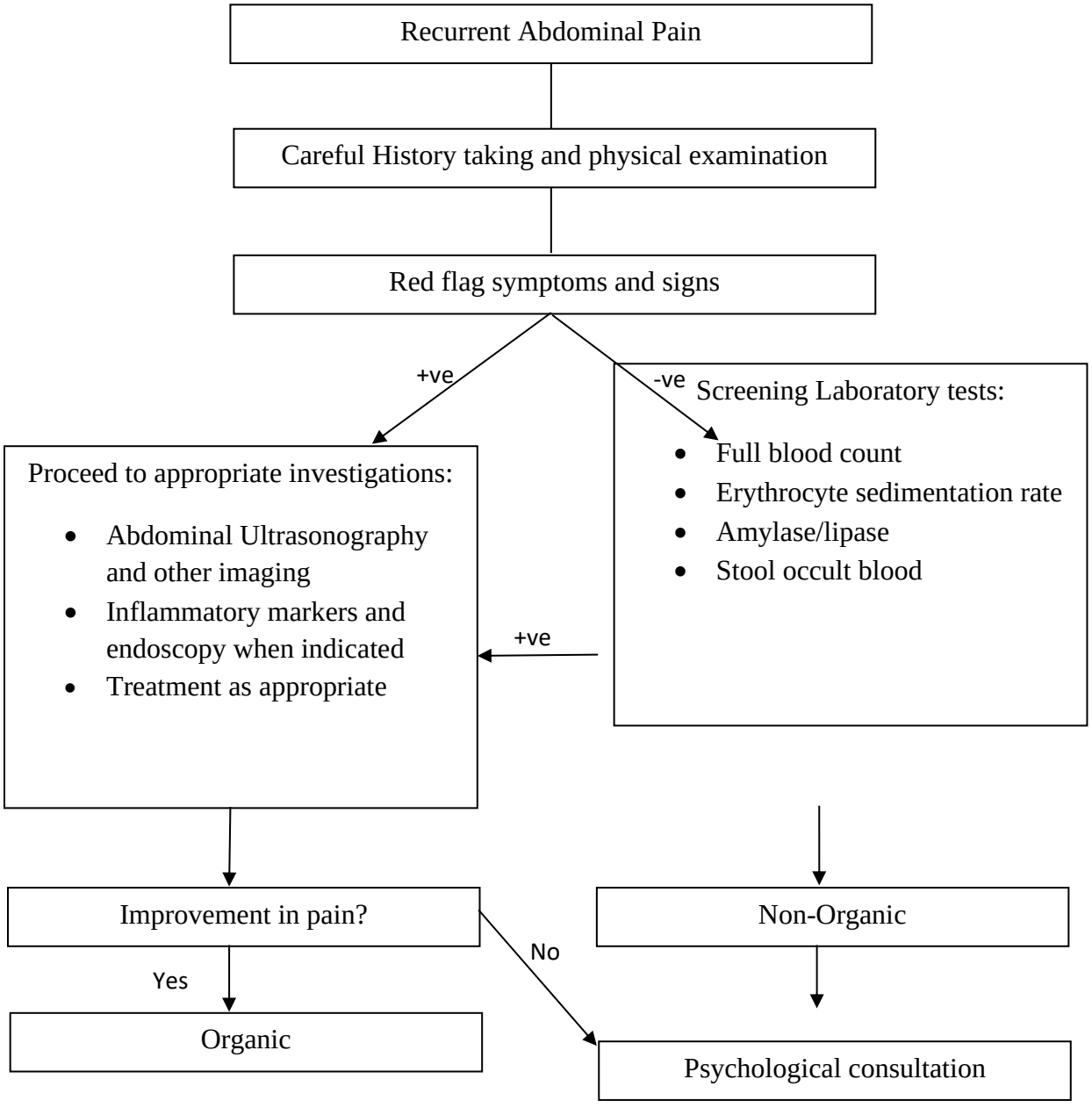
Simple laboratory tests to consider include

- A CBC for anemia or infection, an ESR or C-reactive protein level for infection or inflammatory diseases, a urinalysis for urinary tract infections, and fecal ova and parasite testing for protozoal gastrointestinal infections are some examples of the tests that may be performed.

- Children with RAP, weight loss, nausea, vomiting, anemia, exhaustion, recurring mouth ulcers, or a rash that resembles dermatitis herpetiformis should have celiac disease evaluated. A child should be tested for Crohn disease if they have anemia, hematochezia (a positive fecal guaiac test), and weight loss because these symptoms have a cumulative sensitivity of 94% for the condition in kids.

- Functional gastrointestinal diseases in children are a major cause of morbidity and mental distress, and abdominal radiography may be helpful in diagnosing blockage and constipation in children.

- We have advanced significantly since labelling these diseases as "psychological" (e.g., school phobia). We will be able to provide these kids and their families with a better understanding of the conditions they are dealing with as well as more potent treatments as more information becomes available.



Material & Methods

MATERIAL AND METHODS

- **SOURCE OF DATA:**

  Children between 5-18 years of age presenting to OPD were selected as cases and control for the study.. 180 children with symptoms of RAP were selected and 180 children who had no other symptoms of RAP were selected as controls.

- **ETHICAL CLEARANCE**-

  Permission was taken from the ethical committee of the institute to conduct the study.

- **STUDY DESIGN**- Case-Control Study

- **STUDY PERIOD**- 18 Months from April 2021- December 2022

- **PLACE OF STUDY**-

  It was a hospital-based case-control study conducted in the OPD of a tertiary care hospital in central Ghaziabad, Uttar Pradesh.

- **SAMPLE SIZE**-

  The sample size was calculated using this formula-

$$n = Z^2P(1-P)/d^2$$

N= sample size

Z= level of confidence

P= prevalence

d= precision

The prevalence of Recurrent Abdominal pain with respect to the studies conducted in school going children is 10-12% and d was 5% precision

Hence the sample size calculated comes out to be 163.

- **INCLUSION CRITERIA-**

1. Children of the age group 5-18 years with at least 3 episodes of abdominal pain that occurred over at least 3 months were included for the case group.
2. Children who were willing for their blood testing for the making of diagnosis.
3. Children whose parents gave consent for interview, examination and blood testing.

- **EXCLUSION CRITERIA**

1. Doubtful cases due to incomplete workup.
2. Children less than 4 years of age
3. Children already diagnoses as a case of Organic Disease
4. Failure to obtain consent from parents or care giver

DATA MANAGEMENT AND STATISTICAL ANALYSIS-

The study was approved by Institute ethics committee. The consent of the parents was must for participation in the study. The data collected was age, gender, BMI of child, physical activity in a week, red flag signs and the diet intake of child They were used to understand their association with recurrent abdominal pain and to compare the dietary habits of case and control groups.

Statistical analysis was done using MS excel and stata software SPSS trial version 27. P value was calculated for association of age , BMI, physical activity, red flag signs. Mean and standard deviation was calculated for the dietary habits. Basic descriptive statistics (mean & standard deviation) were calculated for dietary habits. chai square test was applied for association between categorical variables.

METHODOLOGY

The present study was a case control study performed in a general paediatric opd in Santosh Hospital Ghaziabad Uttar Pradesh between April 2021- December 2022.

The sample size was calculated using formula $n= z^2P(1-P)/d^2$, where prevalence used was 10-12% and d was 5% precision.

The sample size required using this formula was 163. But it was decided to increase the sample to exclude the participants who would be lost during the follow up and also to improve the accuracy of the study.

180 children ranging from 4 years to 18 years presenting to OPD with symptoms of recurrent abdominal pain were included as cases.

180 children who presented to OPD with symptoms other than symptoms of recurrent abdominal pain ranging from 4-18 years of age were taken as control group for the study.

Children who were already diagnosed as a case of organic disease and were on treatment were excluded from the study.

Consent for the study was taken from the parents and they were well informed about the study.
Proper history including site of pain, duration of the pain, nature of the pain, aggravating factor, precipitating factor was extracted from the parents and the child.

Major interest was taken in the dietary history of the subjects that were involved in the study.

The biophysiological profiles of the cases were noted carefully to calculate the BMI of the enrolled cases and they were categorized into normal, obese/overweight and undernourished according to IAP charts.[48]

Question	Group
Out of the 14 meals per week How many include fish	Fish
In how many out of the 14 meals per week , additional fast food is consumed after the meal	Junk Food
Fizzy drinks (cups or cans) per week	Non lactose simple carbohydrates
Out of the 14 meals per week How many include salad	Fiber
Occasion of fruit consumption per week (in any form)	Fiber , non lactose simple carbohydrates
Out of the 14 meals per week How many include meat	Meat
Occasions of cheese consumption per week	Dairy
Servings of Milk per week	Dairy
Out of the 14 meals per week How many include vegetable/legumes	Fiber
Serving of fresh juice per week	Non lactose simple carbohydrates
Occasions of snacks consumption per week	Junk Food
Serving of yogurt per week	Dairy
Occasions of sweet consumption per week	Non lactose simple carbohydrates
Out of the 14 meals per week How many include fast food, exclusively	Junk Food

After taking the detailed history of the cases, they were examined. Both general examination and systemic examination were taken into consideration.

Base line laboratory investigations like complete blood count, basic biochemistry, inflammatory markers, and urinalysis were performed for all the cases and control groups. On the result of investigations, patients were divided into organic and non-organic cases.

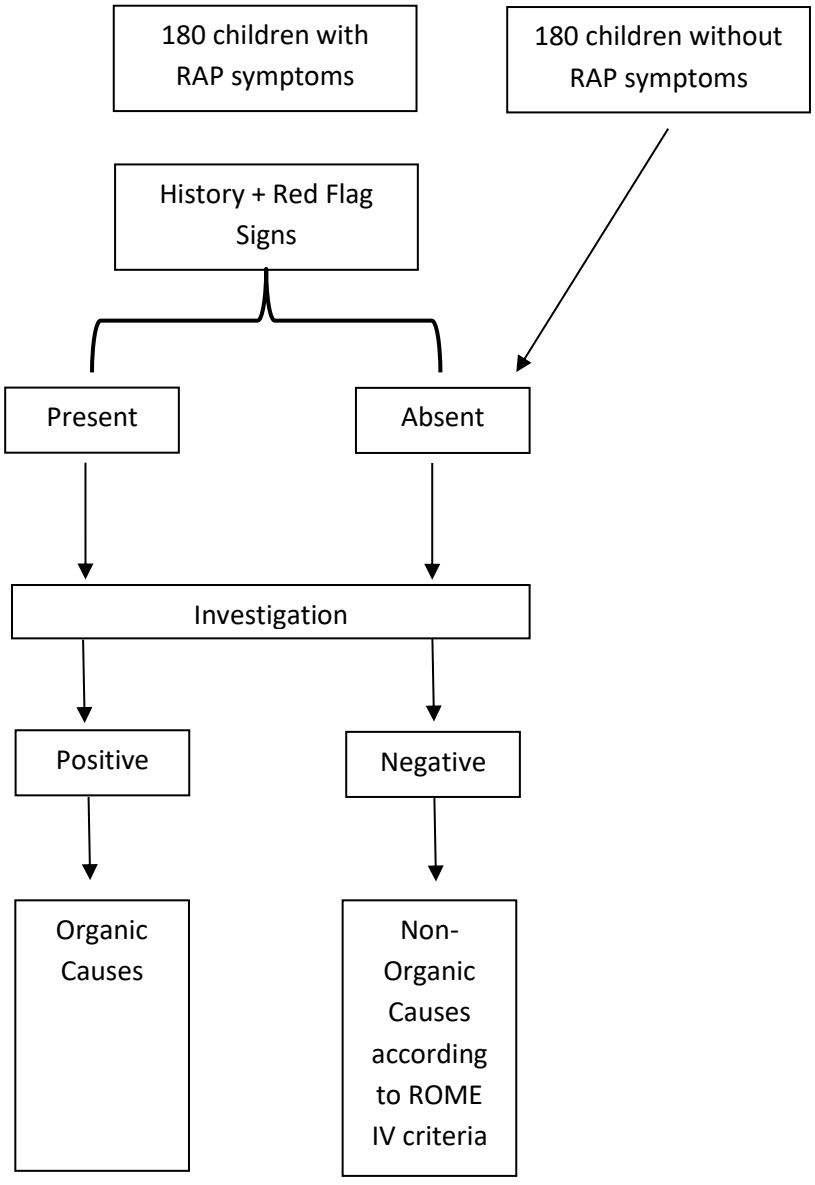
- The cases whose laboratory work showed variation and abnormal counts and had red flag signs associated in the history were labelled as Organic cases. Non organic cases will be decided by ROME'S IV criteria.

Organic RAP will be labelled when :-

a) An organic cause will be demonstrated.
b) There will be clinical and laboratory evidence
c) There will be decrease or minimal abdominal pain for at least three months

Rest of the patients will be labelled as non- organic RAP (NORAP) and managed accordingly for 4-6 months. The cases will be managed as per diagnosis and will be treated.

180 control cases were selected but the investigations were non - significant for them as they did not present with the symptoms of Recurrent Abdominal Pain. Detailed Dietary history of these patients were taken and compared with the case group to evaluate the effect of dietary habits in RAP.



Observation & Result

OBSERVATIONS AND RESULTS-

The present study was done to study the causes of recurrent abdominal pain in an urban hospital of Ghaziabad. During the period of 1 year from APRIL 2021- APRIL 2022 in school going children. 360 pediatric cases from age 5-18 years including cases and control were studied at Department of Pediatrics,

Table 1 depicts various variables like age, gender, BMI, days of physical activity, red flag signs and their distribution in various causes of RAP and in control.

Total number of organic cases from 180 cases were 100 and total number of non-organic cases were 80. Age plays a significant role in recurrent abdominal pain and it was proved statistically. for organic (p value <0.05) and for non-organic (p value <0.05).

BMI also has been proved statistically significant as p value for organic <0.05 and for non-organic Is <0.05. Days of physical activity and red flag signs both have association with RAP and are statistically significant as p value for physical activity for organic (p value <0.05) and for non-organic (p value < 0.05).

For red flag signs in organic causes (p value <0.05) and in organic cases (p value <0.05) and hence are statistically significant.

Figure 1 Represents **Age distribution of RAP in organic causes, non-organic causes and control group**

Figure 2- **Gender distribution of RAP in organic causes, non-organic causes and control group.**

Figure 3- **BMI distribution of EAP in organic cases, non-organic cases and control group.**

Figure 4- **Relation of Physical Activity with RAP cases and control group**.

Figure 5 – **Presence of Red Flag Signs in Recurrent Abdominal Pain**

Table 2- **Presence of various Red Flag signs in organic and non-organic causes of recurrent abdominal pain.**

Table 3 represents **sensitivity and specificity of Red flag signs in Recurrent Abdominal pain.**

Table 4- **Most common causes of Organic pathology of recurrent abdominal pain in our study**

Table 5 – Mean and Standard Deviation of weakly intake of dietary habits of cases and control. Also shows the significance of dietary habits. P value for dietary habits (p value <0.05) hence statistically significant.

Characteristics		**Organic (100)**	**Non Organic (80)**	**Control (180)**
		N(%Prop)	**N(%Prop)**	**N(%Prop)**
Age	Less than 10 years	55(55)	30(37.5)	76(42.2)
	10 to 18 Years	45(45)	50(62.5)	104(57.7)
	P value	.040	.041	.067
. **Gender**	Male	66 (66)	33 (41.2)	124(68.8)
	Female	34 (34)	47 (58.7)	56 (31.1)
Body Mass Index (BMI)	Normal	60(60)	32(40)	148(82.2)
	Obese/Overweight	27(27)	43(53.7)	30(16.6)
	Undernourished	13(13)	5(6.25)	2(1.1)
	P value	.00	.00	.00
Days of physical Activity per week	None	6(6)	12(15)	32(17.7)
	1 to 3 days	78(78)	63(78.7)	76(42.2)
	4 to 7 days	16(16)	5(6.25)	72(40)
	P value	.00	.00	.042
RED FLAG SIGNS	Present	97(97)	6(7.5)	0
	Absent	3(3)	74(92.5)	0
	Not Significant	0	0	180(100)

TABLE- 1: Age, sex , body mass index, days of physical activity , red flag signs distribution in the cases and control group in the study performed from Jan 2021-Jan 2022

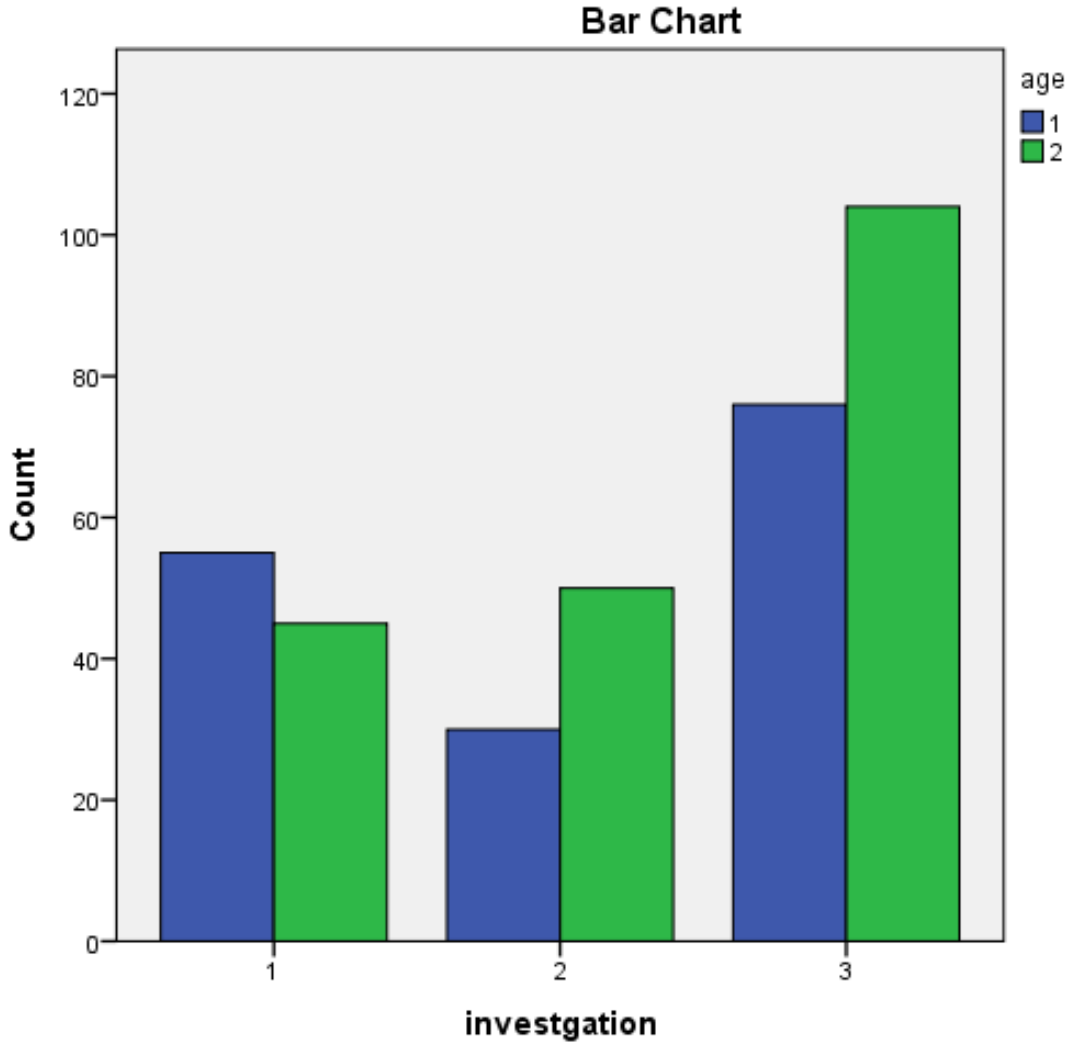


Figure 1: On X axis –

1. Organic
2. Non-organic
3. Control

On Y axis-

1. <10 years
2. 10-18 years

Figure 1: Age distribution of Recurrent Abdominal pain in organic, non organic cases and control group

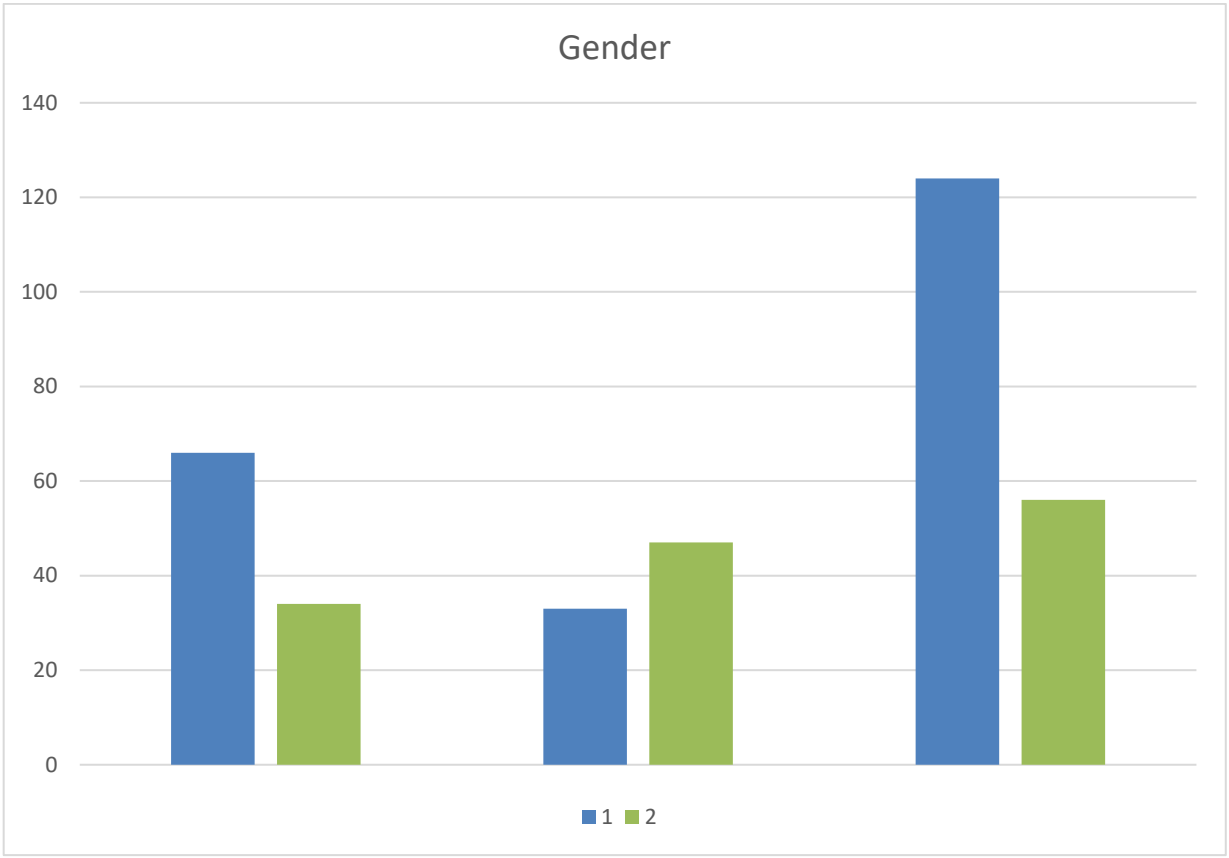


Figure 2: Gender distribution of Recurrent Abdominal pain in organic, non-organic cases and control group.

On X axis-

1.Organic

2.Non-organic

3.Control

On Y axis-

1.<10 years

2.10-18 years

Figure 3: BMI distribution of Recurrent Abdominal Pain in organic, non-organic cases and control group.

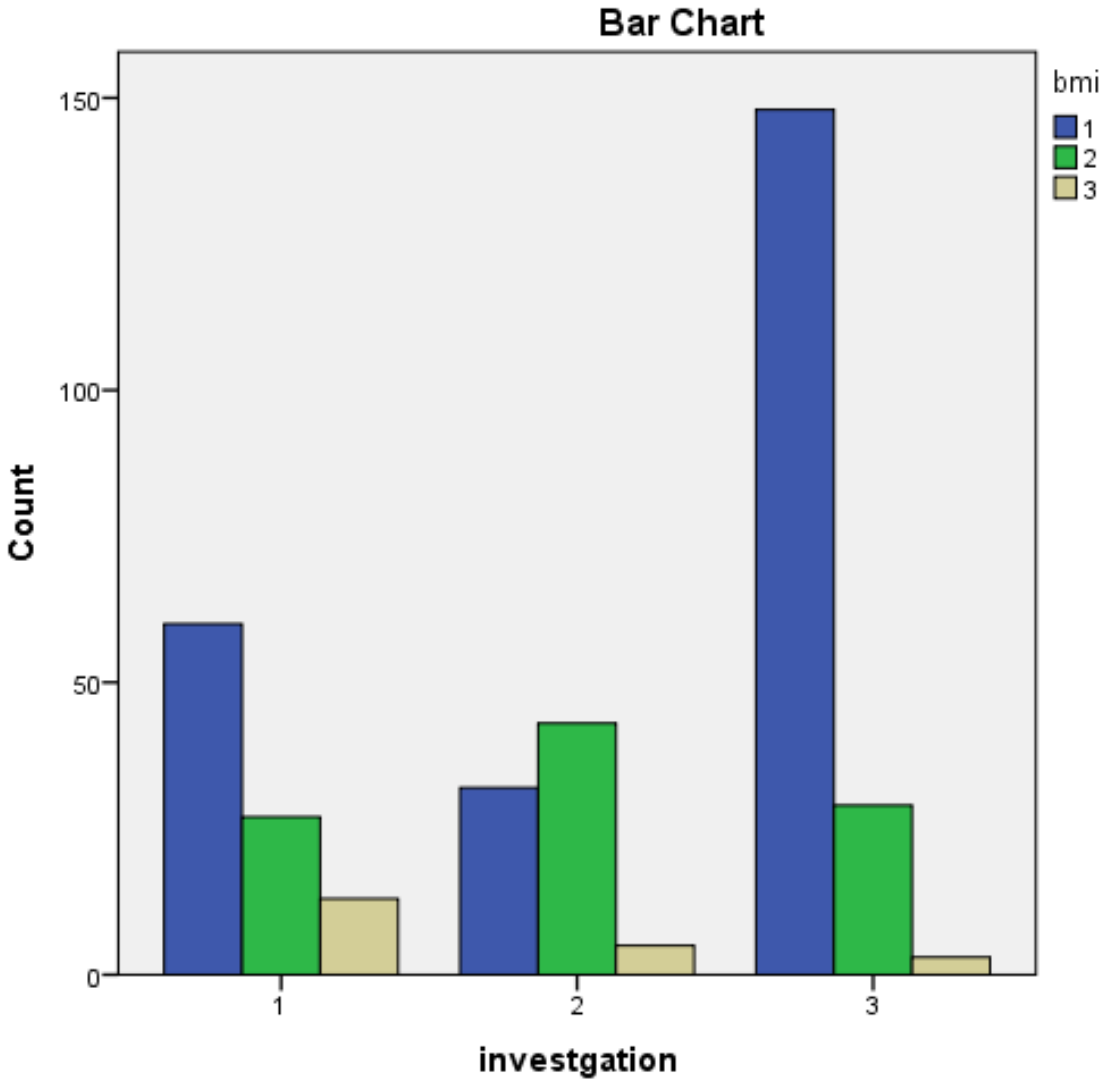


Figure 3:

On X axis-

1. Organic
2. Non- Organic
3. Control

On Y axis-

1. Normal
2. Obese / Overweight
3. Undernutrition

Figure 4: Relation of Physical Activity with organic , Non organic cases and control group.

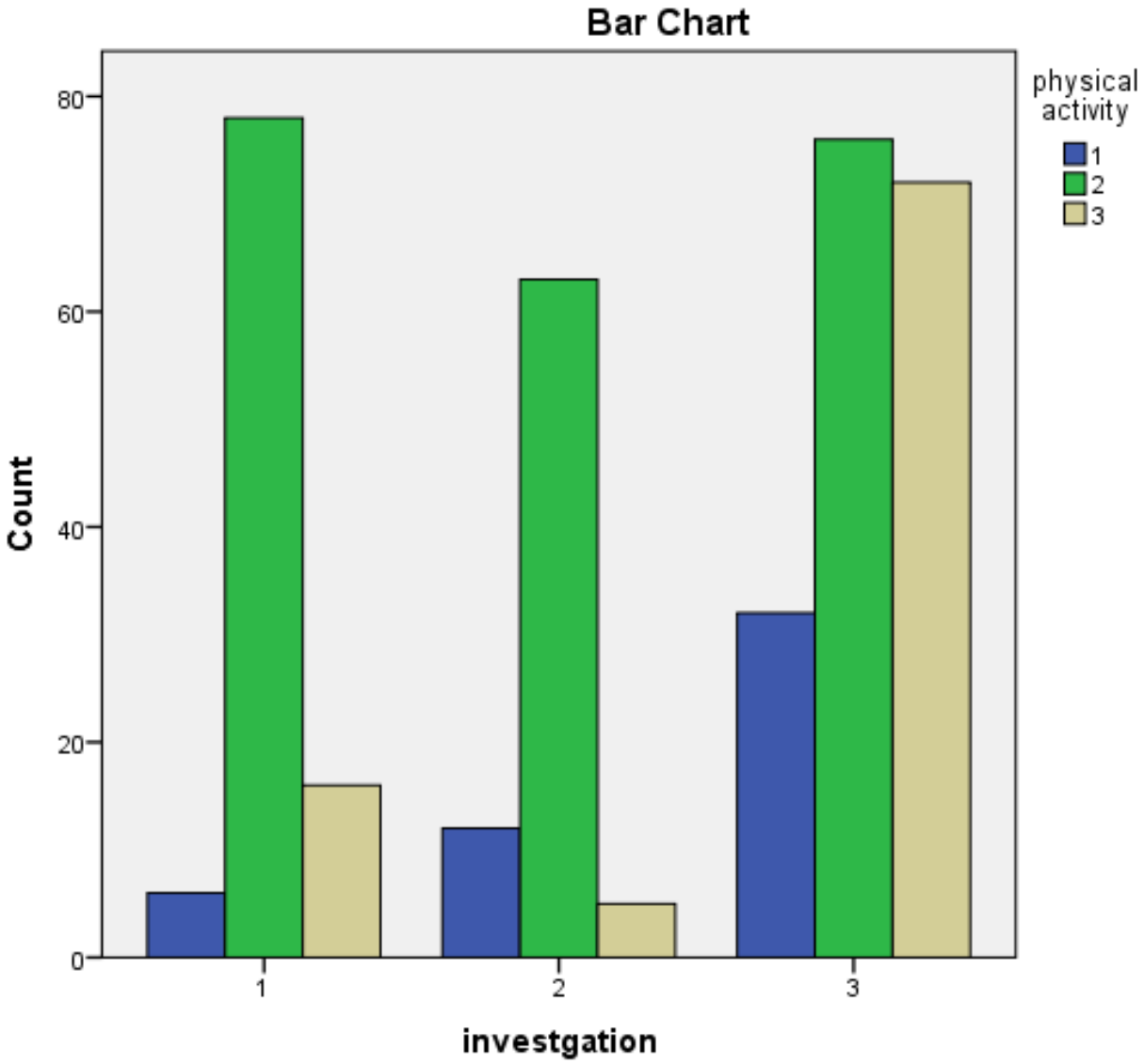


Figure 4:

On X axis-

1. Organic
2. Non- Organic
3. Control

On Y axis (Physical activity per week)

1. None
2. 1 to 3 Days
3. 4 to 7 Days

Figure 5: Presence of Red Flag Signs in Organic, Non Organic cases and Control group.

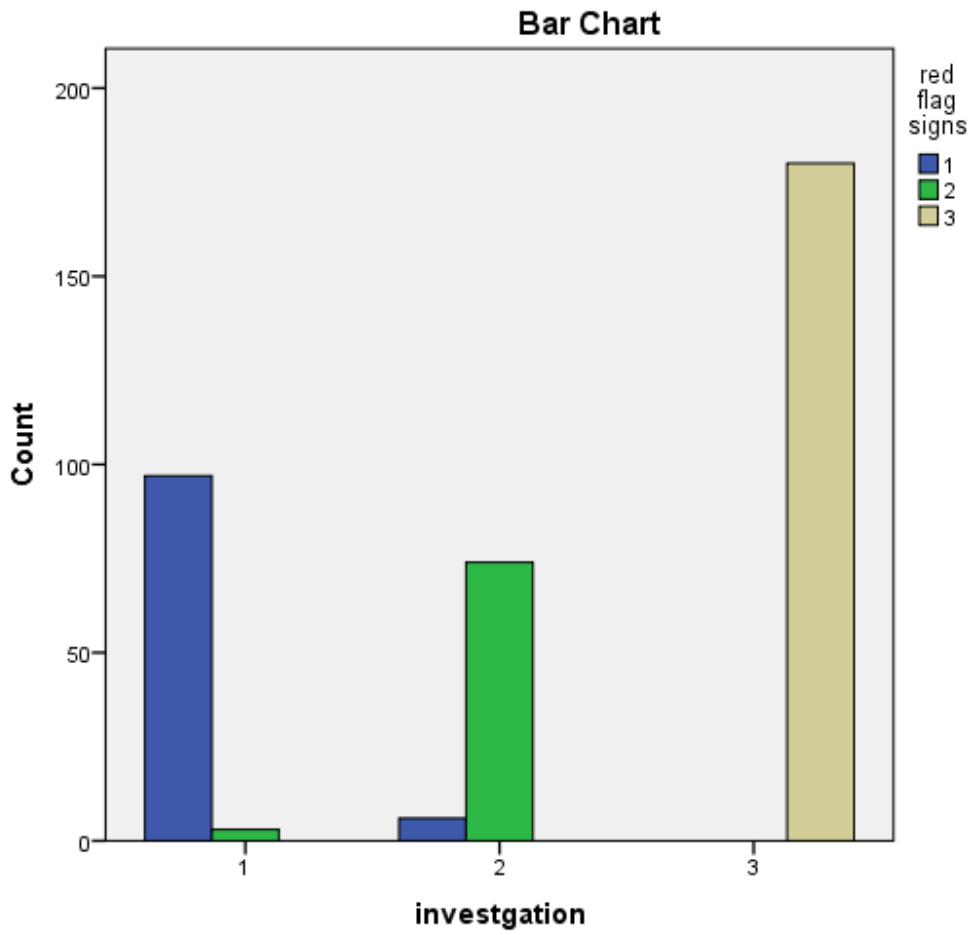


Figure 5:

On X axis-

1. Organic
2. Non-Organic
3. Control

On Y axis-

1. Present
2. Absent
3. Non-Significant

TABLE 2: Association Of Red Flag Signs with Organic and Non-Organic Causes In Recurrent Abdominal Pain

Red Flags	Recurrent Abdominal Pain	
	Organic	Non - Organic (functional)
Fever	15	1
Growth Disorder	10	2
Extra intestinal Symptoms	4	2
Nocturnal Pain	20	3
Weight loss	24	2
Hematemesis	2	0
Dysphagia	0	0
Pain Not located in periumbilical area	32	15
Organomegaly	7	2
Fecal incontinence	0	0
Positive Familial history for Peptic ulcer	6	1
Frequency and Dysuria	10	0
Delayed Puberty	0	0
Icterus	6	2
Peri Anal Complications	4	8
Rash	0	0
Blood in stool examination	0	0
Positive Familial history for IBD	0	0
Hematochezia	0	0
Anemia	15	4
Hematuria	4	1
Diarrhea and Vomiting	20	10
Elevated ESR	20	0
Abdominal Tenderness	28	4

TEST	PRESENT	ABSENT
POSITIVE	*TRUE POSITIVE (97)* *(a)*	FALSE POSITIVE (3) (c)
NEGATIVE	*FALSE NEGATIVE (6)* *(b)*	TRUE NEGATIVE (74) (d)
	a + b = 103	c + d = 77

Table 3: Sensitivity and Specificity of Screening of Red Flag Signs for Organic Causes of Recurrent Abdominal Pain,

Sensitivity = a/ (a+b) = 94.17%

Specificity = d/ (c+d) = 96.10%

Results of Organic Pathology	Percent of Sample Size (100)
UTI	34
Abdominal T.B.	19
Worm Infestation	29
Gastro Esophageal Reflux	16
Renal Calculi	2

Table 4: Common organic causes for Recurrent Abdominal Pain

Table 5: Mean and Standard Deviation of weekly intake of dietary habits between cases and control

		CASES (ORGANIC &NON-ORGANIC)	CONTROL
Dietary Habits	**Fiber**	17.59±1.674	18.87±1.459
	P value	.000	.000
	Junk	8.63±2.499	6.66±2.395
	P value	.000	.000
	Dairy	15.45±2.620	16.35±7.829
	P value	.148	.147
	Spicy Food	6.11±1.749	6.54±2.331
	P value	.047	.047
	Non-Lactose Simple Carbohydrate	17.63± 2.587	16.47±7.78
	P value	.060	.060

Discussion

DISCUSSION;

- Organic causes are more leading causes for Recurrent Abdominal pain in pediatric age group.
- Strong association was found between Age, BMI, Red flag signs, Physical activity and Recurrent Abdominal Pain.
- Dietary habits have association with recurrent abdominal pain.

The present study was intended to get an insight on the leading causes of recurrent abdominal pain in a pediatric population. According to Apley and Nash the prevalence of recurrent abdominal pain in school going children is 10-12%. Recurrent Abdominal pain is an increasing concern affecting the daily activity of children.

In the present study, Organic causes responsible for recurrent abdominal pain is 55% and the Non organic causes responsible for RAP is 44%. In comparison to the other studies done on RAP it showed that study done by Bandyopadhyay A, Mondal PK the organic causes of RAP was found in 88% of patients, and the non-organic causes were responsible for 12%.[42]

Mavromichalis et al in their study have demonstrated that organic causes constitute 93% of study group [49].

Romanezuk, et al found that 89% of the children in their study group had one or the other organic cause for their RAP, only 11% were suffering from functional abdominal pain [45].

The result of the present study is in concordance with the study done by Bansal . in the study done by Bansal et al RAP found 47% of children to have organic causes [41].

The present study showed UTI (34%), Abdominal Tuberculosis (19%),worm infestation (29%),Gastroesophageal reflux (16%) as the leading causes of RAP in organic group. Similar finding was observed in study performed by Bandyopadhyay and Mondel. The most common cause was parasitic infestation (76%), Urinary tract infection (8%), gastro esophageal reflux disease (2%), abdominal TB (1%) [42].

According to this present study and the previous studies are done. The proportion of recurrent Abdominal pain due to organic causes is more as compared to non-organic cases.

The proportion of non-organic disease has increased but yet organic cause remains the leading cause.

RISK FACTORS FOR RECURRENT ABDOMINAL PAIN;

- **Age-**

In the present study, there is a significant association between age and recurrent abdominal pain. Recurrent Abdominal pain is more prominent in school-going children. The study was conducted for two age groups-

1. Less than 10 years
2. 10-18 years.

In the study conducted the organic group had 55% of the total cases in less than 10 years, while 45% in the age group ranged from10-18 years.

The non-organic group had 37.5% of total cases in less than 10 years and 62.5% in the age group 10-18 years.

In the control group 42.2% in less than 10 years and 57.7% in 10-18 years.

In the study done by Wadhwa N and Sibal A the children in the age group of 10-12 years had a maximum prevalence of RAP (54%) followed by those in the age group of 12-14 years (30%)[11].

- More cases of Recurrent Abdominal pain are noted in 10-18 years of age may be due to better interpersonal communication that gives them the advantage to explain their complaints fully.

- **SEX-**

In the present study, there was male predominance in Organic group which is 66% and female contributed for 34%

In Non organic group their was female predominance with 58.7% and male population was 41.2%.

In Control group 68.8% were males and 31.1 % were females.

The prevalence in boys was found to be 11.5% and in girls was 18.9% in study done by Wadhwa N and Sibal A[11].

In Apley's study the sex wise prevalence was found to be 9.5% for boys and 12.3% for girls while Pringle's study the prevalence for boys was 14% and for girls 15.7%[50].

It is noteworthy that more boys than girls were present in the hospital-based investigations investigating for organic reasons of RAP in children. This might be because girls are clearly discriminated against in the community, where boys are considerably more likely to obtain medical attention than girls.

- **BODY MASS INDEX (BMI)-**

All the children enrolled were categorized into-

1. Normal
2. Obese/ Overweight
3. Undernutrition

60% of children in organic group were of normal BMI . 27% of the total organic cases were obese/overweight and 13% were in the undernourished category.

Majority of undernourished children out of all the three groups were seen in Organic causes of Recurrent Abdominal pain.

In non- organic cases 40% children are having normal BMI. 53.7% of the total non - organic cases are under the non -organic category. Only 6.25% contributed to undernourished category.

In control group 82.2% of 180 cases enrolled were of normal BMI, 16.6 % was of Obese and overweight category. 1.1% fell into undernourished category.

Majority of Obese / overweight children were seen in the non-organic group of Recurrent Abdominal pain.

The result of the present study is similar to the study done by Phatak and Pashankar. There was higher prevalence of FGID in obese/overweight children versus normal weight children.

Importantly, compared to children of normal weight, obese and overweight kids were noticeably more likely to have at least one FGID. The association between at least one FGID and obesity and overweight was statistically significant.

The obesity prevalence in Phatak and Pashankar is 27% which is higher than reported by the Centre for disease control in children[20].

There has been rising trend in the obesity over the years as the recent studies have concluded and all the studies conclude strong association between obesity and recurrent abdominal pain.

- **PHYSICAL ACTIVITY-**

  There is strong association between physical activity with Recurrent Abdominal Pain.

In the present study the days of physical activity were divided into three groups.

1. None
2. 1 to 3 Days
3. 4 to 7 Days

In organic group of Recurrent Abdominal pain 6% of the children did not have any type of physical activity. 78% have some type of physical activity for 1 to 3 days in a week.

16% were very regular with the physical activity and had majorly for 4 to 7 days in a week.

In non- organic group of RAP 15% of the children had no physical activity on any of the day. 78.7 % have some type of physical activity for 1 to 3 days in a week. 6.25% were very regular with the physical activity and had majorly for 4 to 7 days.

In control group 17.7% of children had no physical activity in a week. 42.2% have some type of physical activity for 1 to 3 days in a week and 40% were very regular with the physical activity and had majorly for 4 to 7 days in a week.

- **RED FLAG SIGNS-**

Red Flag signs play a major role in organic group of Recurrent abdominal pain. In present study there is a strong association between red flag signs and RAP.

Red flag signs were present in 97% and absent in 3% children in organic group of RAP.

In Non organic group red flag signs were present in only 7.5% and absent in 92.5%.

In control group the red flag signs were absent in all the enrolled children as they had no signs and symptoms of RAP.

In the present study the most common red flag signs associated with organic causes were fever, pain during night, elevated ESR, weight loss, growth disorder, and abdominal tenderness. Red flag signs were also associated with non-organic causes.

This result is similar to the study done by Azaneh Motamed, MD; Reihaneh et al which also concluded that red flag signs have correlation with organic causes of RAP[8].

In present study the sensitivity and specificity of red flag signs in recurrent abdominal pain were calculated. The red flag signs are 94.17 % sensitive and 96.10% specific in diagnosing the organic cause of Recurrent abdominal pain.

It shows strong co-relation between red flag signs and RAP.

- **DIETARY FACTORS-**

In present study the dietary habits were compared between two groups. The organic and non-organic group were together labeled as RAP and the second group was control group.

There was strong association between dietary habits and recurrent abdominal pain.

The dietary history was taken under 5 categories-

1. Junk
2. Fiber
3. Spicy food
4. Dairy
5. Non-Lactose simple carbohydrate.

In RAP group the mean and standard deviation for fiber intake was 17.59±1.674.

Mean and standard deviation for Junk was 8.63±2.499

Mean and standard deviation for Dairy was 15.45±2.620

Mean and standard deviation for spicy food intake was 6.11±1.749

Mean and standard deviation for NLSC was 17.63±2.587

In Control group the mean and standard deviation for fiber was 18.87±1.459

Mean and standard deviation for Junk was 6.66±2.395

Mean and standard deviation for Dairy was 16.35±7.829

Mean and standard deviation for Spicy food was 6.54±2.331

Mean and standard deviation for NLSC was 16.47±7.78

In present study there is a significant difference in intake of fiber and junk food. More fiber intake was seen in the control group hence less recurrent abdominal pain noted in that group.

More junk intake is noted in RAP group, showing association between junk and recurrent abdominal pain.

This study results are similar to the study done in Brazil which also concluded that children with **RAP had lower intake of total fiber than the control group** (13.4 g/day) .

But there are also studies which differs in their result. A recent meta-analysis with **3 randomized controlled trials (RCTs) comparing use of dietary fiber supplements with placebo for AP-FGID in children (aged 5-17 years) found lack of evidence for high fiber supplementation as a dietary manipulation.**

There are more evidence which shows that less fiber intake and more junk consumption increases the chances of Recurrent Abdominal Pain.

Summary & Conclusion

SUMMARY & CONCLUSION

The present study showed an increase in organic causes of Recurrent Abdominal pain as compared to the studies done before. There has been rise in the cases of non-organic RAP but the leading cause still remains as organic RAP.

The age mostly involved in Recurrent Abdominal Pain in organic cause is less than 10 years and in non-organic cause is 10-18 years. This could be because of the better interpersonal communication of this children.

Very less studies have been done which shows association between obesity as a risk factor for Recurrent abdominal pain. In the present study there has been strong association between obesity, and it has been proved as one of the important risk factor for RAP.

The psychosocial, emotional, and behavioral disorders that are prevalent in obese and overweight children play a substantial part in the increased incidence of FGIDs in obese/overweight children.

Second, the absence of exercise and physical activity may have contributed to a general decline in daily functioning.

According to the older studies there has been no clear association between dietary habits and recurrent abdominal pain. In this present study there has been clear association between dietary habits and recurrent abdominal pain.

It has been noted that the increase fibre intake and decrease in junk food can decrease the chances of Recurrent abdominal pain.

Presence of red flag signs predicts the organic causes of RAP. In the present study the strong association between red flag signs and RAP. The specificity and sensitivity of red flag signs are 96.10% and 94.17%. This proves strong co-relation between Red flag signs and RAP.

In conclusion:

1. Organic cause still remains the leading cause of RAP
2. Strong association is present between age, BMI, physical activity, obesity and RAP
3. Dietary Habits play major role in RAP
4. Presence of Red flag signs shows more chances of organic cause of RAP.

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Annexure

PROFORMA

SANTOSH MEDICAL COLLEGE & HOSPITAL

PATIENT INFORMATION SHEET

Case No. : OPD No/IPD No:

Name :

Age :

Sex :

Address:

Phone No:

History:

History of any chronic illness:

Dietary History:

- Frequency intake of-
    1. Fiber
    2. Junk
    3. Dairy
    4. Spicy food

5. Non -Lactose simple carbohydrate

Physical Activity

- None
- 1-3 days
- >3 days

Anthropometry

- Weight
- Height

BMI

- Normal
- Obese/ Overweight
- Undernutrition

		Present	Absent
Site of Abdominal pain	Epigastric Area		
	Peri umbilical Area		
	Lumber Area		
	Undetermined		
Severity Of Pain (Visual Analogue pain scale)	Mild		
	Moderate		
	Severe		

	Very Severe		
Red Flag signs	Fever		
	Growth Disorder		
	Extra intestinal Symptoms		
	Nocturnal Pain		
	Weight loss		
	Hematemesis		
	Dysphagia		
	Pain Not located in periumbilical area		
	Organomegaly		
	Fecal incontinence		
	Positive Familial history for Peptic ulcer		
	Frequency and Dysuria		
	Delayed Puberty		
	Icterus		
	Peri Anal Complications		
	Rash		
	Blood in stool examination		
	Positive Familial history for IBD		

	Hematochezia		
	Anemia		
Urinalysis. Tuberculin test	Hematuria		
	Diarrhea and Vomiting		
	Abdominal Tenderness		

On Examination :

General appearance:

Icterus:

Pallor:

Lymphadenopathy:

Heart rate :

Respiratory rate:

Température :

SpO_2:

Systemic examination-

Respiratory system:

Cardio vascular system:

Gastro intestinal system(Per abdomen):

Central nervous system :

<u>INVESTIGATIONS</u>:

- CBC with ESR
- CRP
- Tuberculin Test
- Urine (Routine and Microscopy)
- USG Abdomen
- Endoscopy (if needed)

SANTOSH MEDICAL COLLEGE & HOSPITAL

CONSENT FORM

I……S/O,D/O ……R/O ……..have been explained by Dr. VISHWANI ARORA about the implications and risks of the study. I volunteer to take part in the study titled "**STUDY OF COMPARISON OF CAUSES OF RECURRENT ABDOMINAL PAIN DUE TO ORGANIC OR FUNCTIONAL CAUSES IN CHILDREN (4-18 YEARS): A CASE-CONTROL STUDY"** I have been explained the purpose of the study to my satisfaction.

I hereby give my consent to be enrolled in the study.

Signature of volunteer/guardian

Signature of Investigator

Signature of Witness Phone No.

SANTOSH MEDICAL COLLEGE & HOSPITAL

Informed Consent Form

I ……. son/daughter/wife of……. resident of ……. give my full and voluntary consent to be included as a subject in the study "**STUDY OF COMPARISON OF CAUSES OF RECURRENT ABDOMINAL PAIN DUE TO ORGANIC OR FUNCTIONAL CAUSES IN CHILDREN (4-18 YEARS): A CASE-CONTROL STUDY**" that the study will be conducted in Santosh Hospital. I have been explained, in my own language, and to my full satisfaction, the aim and nature of the study and the risks. I have also been explained that my confidentiality will be maintained, and all the investigations/interventions will be carried out only after my consent is obtained. I am aware of my right to opt out of the study at any point without giving any reason, and without penalty or loss of routine care benefits. My project does not involve any risk.

Thumb Impression/Signature

Name of the Participant

Address of Participant Phone No.-

Date & Time

Dr VISHWANI ARORA Phone No.-
P.G.Student –MD Paediatrics
Santosh Hospital, Ghaziabad

संतोष मेडिकल कॉलेज और अस्पताल

सहमतिपत्र

मैं_____पुत्र/पुत्री_____

निवासी_____को डॉक्टर VISHWANI ARORA द्वारा इस शोधकार्य के सम्बन्ध में "**STUDY OF COMPARISON OF CAUSES OF RECURRENT ABDOMINAL PAIN DUE TO ORGANIC OR FUNCTIONAL CAUSES IN CHILDREN (4-18 YEARS): A CASE-CONTROL STUDY**" होने वाली हानि के बारे में समझा दिया है और मैं इच्छापूर्वक इस शोधकार्य जिसका शीर्षक है और इस शोधकार्य के बारे में समझा दिया गया है **।** अतः मैं उपरोक्त विषय पर शोध कार्य में हिस्सा लेने के लिए सहमत हूँ **।** मुझे समझा दिया गया है की किसी प्रतिकूल प्रतिक्रिया के होने पर इलाज और मुआवजे की ज़िम्मेदारी जांच अधिकारी की है **।** मेरी सभी जानकारी गुप्त रखी जाएगी और मुझे किसी भी समय यह जांच छोड़ने का पूरा अधिकार है **।** मुझे समझा दिया गया है की इस जांच के दौरान मुझे कोई खतरा नहीं है **।**

हस्ताक्षर

जांचअधिकारीकेहस्ताक्षर

गवाह

दूरभाषनंबर

दिनांक

PLIAGARISM CERTIFICATE

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Introduction
INTRODUCTION
Recurrent abdominal pain (RAP), which can afflict up to 10-20% of school-aged children, is highly prevalent. (1) According to Robin et al. (2018), using Rome IV criteria, the prevalence of RAP was 24.7% in children aged 0 to 3 and 25% in children aged 4 to 18 years (2). Although most recurrent abdominal pain is categorized as functional (non-organic functional pain), an organic etiology is discovered in 5% to 10% of instances. (2) RAP is not diagnostic; rather, it is more symptom-based. Functional abdominal pain is defined as recurrent abdominal pain that is unrelated to any anatomical, metabolic, infectious, inflammatory, or neoplastic illnesses. In actual practice, FGIDs are quite prevalent, accounting for more than 50% of pediatric gastroenterologists' consultations and 2-4% of pediatric doctor visits. Recurrent Abdominal Pain in children is defined as at least three episodes of pain that occurs over at least three months and affects the child's ability to perform normal activities.(3)
It is possibly the most common painful health problem In school-going adolescents (2). Even though a lot of work has been done to understand the causative associations and the pathophysiology of recurrent abdominal pain in children, most of this has been done in the west. Studies related to this topic are inadequate, especially in an Indian setup.
Over the years the prevalence of recurrent abdominal pain is increasing. The growing number of children with functional abdominal pain disorders (FAPDs) has been implicated to changes in children's lifestyles, including lower physical activity levels, increased consumption of sweets, sweetened beverages and junk food & higher stress (3,4). Most studies have focused on gender, age, genetic factors, psychosocial factors (1), few have explored the relationship with diet & obesity. Majority studies focus on symptoms found in children labelled as suffering from NORAP. Rome IV criteria , which gives data that does not correspond with data of ROME III Criteria as it is done in previous studies, was introduced in 2016 for the purpose of advancing information and improving understanding of childhood FGIDs. (5) Paediatric RAP is a serious issue that adversely affects children's health, school performance, emotions and perception of their own fitness and health.
The issue can get worse for parents, patients, and doctors if an excessively lengthy search for an organic disease is conducted at the expense of careful assessment, engagement, explanation, and review..
severe /frequent RAP episodes can cause child to miss out on school, disrupt family activities, hence it is essential to make a definite diagnosis and manage the disease.
Determining if there is an organic or nonorganic basis for a child's recurring episodes of stomach pain has traditionally been the standard course of treatment.
To decide if an organic or nonorganic cause is present, a diagnostic workup should be performed. This includes simple laboratory tests such complete blood count, erythrocyte sedimentation rate, and urinalysis for infection, inflammation, or urinary tract infection.

Master Chart

S.No	NAME	AGE		SEX		BMI		DAYS OF PHYSICAL ACTIVITY PER WEEK		FIBRE	JUNK	SPICY FOOD	DAIRY	NON-LACTOSE SIMPLE CARBOHYDRATE	INVESTGATIONS		RED FLAG SIGNS	
1	Satyam	12	2	M	1	N	1	3/ week	2	18	9	9	17	16	Not Done	3	NOT SIGNIFICANT	3
2	Meenu	8	1	F	2	O	2	3/ week	2	16	5	10	15	16	Not Done	3	NOT SIGNIFICANT	3
3	Radhe	14	2	M	1	N	1	3/ week	2	19	5	4	17	14	Not Done	3	NOT SIGNIFICANT	3
4	Irfan	8	1	M	1	N	1	3/ week	2	19	9	6	21	15	Positive	1	Present	1
5	Naresh	14	2	M	1	N	1	>3/ week	3	19	8	3	8	16	Not Done	3	NOT SIGNIFICANT	3
6	Neha	16	2	F	2	O	2	>3/ week	3	16	5	4	16	21	Negative	2	Absent	2
7	Kamini	12	2	F	2	O	2	3/ week	2	17	7	6	17	21	Negative	2	Absent	2
8	Jignesh	11	2	M	1	N	1	>3/ week	3	18	10	9	17	17	Not Done	3	NOT SIGNIFICANT	3
9	Gautam	5	1	M	1	O	2	NONE	1	18	6	9	18	20	Not Done	3	NOT SIGNIFICANT	3
10	Kishor	14	2	M	1	N	1	>3/ week	3	20	12	4	17	18	Not Done	3	NOT SIGNIFICANT	3
11	Faizan	11	2	M	1	O	2	3/ week	2	20	9	6	13	16	Negative	2	Absent	2
12	Ganesh	9	1	M	1	N	1	3/ week	2	15	9	9	16	16	Positive	1	Present	1
13	Daman	5	1	M	1	O	2	3/ week	2	18	7	7	18	15	Negative	2	Absent	2
14	Jamal	5	1	M	1	O	2	3/ week	2	17	13	8	19	16	Positive	1	Present	1
15	Tanuj	15	2	M	1	N	1	3/ week	2	18	9	8	18	17	Not Done	3	NOT SIGNIFICANT	3
16	Shalini	16	2	F	2	O	2	3/ week	2	16	10	5	20	18	Positive	1	Present	1
17	Aditya	9	1	M	1	N	1	3/ week	2	15	13	5	11	15	Positive	1	Present	1
18	Chirag	6	1	M	1	N	1	3/ week	2	20	10	5	21	17	Negative	2	Absent	2
19	Mehak	9	1	F	2	N	1	3/ week	2	21	8	7	17	10	Not Done	3	NOT SIGNIFICANT	3
20	Faizal	12	2	M	1	O	2	3/ week	2	18	5	3	14	15	Negative	2	Absent	2
21	Amitabh	7	1	M	1	N	1	>3/ week	3	21	9	5	15	18	Not Done	3	NOT SIGNIFICANT	3
22	Sanjeeta	4	1	F	2	O	2	3/ week	2	20	7	8	16	18	Not Done	3	NOT SIGNIFICANT	3
23	Shazia	14	2	F	2	O	2	3/ week	2	15	8	9	12	13	Positive	1	Present	1
24	Disha	16	2	F	2	U	3		2	18	8	8	13	16	Positive	1	Present	1
25	Himani	13	2	F	2	O	2	3/ week	2	17	7	4	18	18	Negative	2	Absent	2
26	Aalind	16	2	M	1	N	1	None	1	19	9	6	13	24	Negative	2	Absent	2
27	Aakash	8	1	M	1	N	1	None	1	16	7	3	11	23	Negative	2	Absent	2
28	Mahaveer	11	2	M	1	N	1	>3/ week	3	16	8	9	18	116	Not Done	3	NOT SIGNIFICANT	3

29	Nandan	10	2	M	1	N	1	>3/ week	3	17	5	6	16	15	Not Done	3	NOT SIGNIFICANT	3
30	Vishi	16	2	F	2	O	2	NONE	1	20	4	5	14	16	Not Done	3	NOT SIGNIFICANT	3
31	Oorja	18	2	F	2	O	2	>3/ week	3	15	8	6	11	24	Negative	2	Absent	2
32	Luv	13	2	M	1	U	3	>3/ week	3	15	10	8	19	18	Positive	1	Present	1
33	Krutika	15	2	F	2	O	2	3/ week	2	16	10	5	16	15	Positive	1	Present	1
34	Nanak	13	2	M	1	N	1	>3/ week	3	18	9	7	14	10	Not Done	3	NOT SIGNIFICANT	3
35	Tamal	13	2	M	1	N	1	3/ week	2	20	4	4	17	16	Not Done	3	NOT SIGNIFICANT	3
36	Dheeraj	8	1	M	1	O	2	3/ week	2	20	10	4	15	14	Negative	2	Present	1
37	Paras	18	2	M	1	N	1	3/ week	2	22	4	3	15	18	Not Done	3	NOT SIGNIFICANT	3
38	Baby	14	2	F	2	O	2	3/ week	2	18	9	5	16	16	Not Done	3	NOT SIGNIFICANT	3
39	Kamlesh	9	1	M	1	O	2	3/ week	2	18	9	9	15	19	Positive	1	Present	1
40	Deepak	6	1	M	1	O	2	3/ week	2	16	4	5	20	24	Negative	2	Absent	2
41	Bhawna	8	1	F	2	N	1	None	1	16	10	6	15	15	Negative	2	Absent	2
42	Kailash	17	2	M	1	N	1	>3/ week	3	19	4	7	19	13	Not Done	3	NOT SIGNIFICANT	3
43	Divakar	5	1	M	1	N	1	3/ week	2	19	13	6	13	15	Positive	1	Present	1
44	Unnati	12	2	F	2	O	2	3/ week	2	19	8	6	19	13	Positive	1	Present	1
45	Brij	8	1	M	1	N	1	3/ week	2	17	9	9	12	21	Positive	1	Present	1
46	Dhara	8	1	F	2	N	1	3/ week	2	18	8	4	19	16	Negative	2	Absent	2
47	Meenu	16	2	F	2	O	2	3/ week	2	16	2	5	17	24	Negative	2	Absent	2
48	Archana	13	2	F	2	N	1	>3/ week	3	19	6	6	15	16	Not Done	3	NOT SIGNIFICANT	3
49	Shruti	11	2	F	2	N	1	>3/ week	3	20	5	9	16	15	Not Done	3	NOT SIGNIFICANT	3
50	Qasim	12	2	M	1	N	1	3/ week	2	16	8	5	13	11	Not Done	3	NOT SIGNIFICANT	3
51	Rajesh	17	2	M	1	N	1	3/ week	2	19	7	7	15	12	Not Done	3	NOT SIGNIFICANT	3
52	Krunal	17	2	M	1	N	1	3/ week	2	18	4	8	16	17	Not Done	3	NOT SIGNIFICANT	3
53	Harish	13	2	M	1	O	2	3/ week	2	18	6	6	15	15	Negative	2	Absent	2
54	Jairam	11	2	M	1	N	1	>3/ week	3	20	6	9	18	16	Not Done	3	NOT SIGNIFICANT	3
55	Lovish	17	2	M	1	N	1	3/ week	2	22	8	5	19	19	Not Done	3	NOT SIGNIFICANT	3
56	Jiveshu	7	1	M	1	O	2	3/ week	2	20	11	9	17	16	Positive	1	Present	1
57	Eklavya	9	1	M	1	N	1	3/ week	2	19	9	7	13	17	Positive	1	Present	1
58	Dhanush	7	1	M	1	N	1	3/ week	2	17	12	8	15	13	Positive	1	Present	1

59	Nitin	17	2	M	1	N	1	>3/ week	3	21	9	4	16	17	Not Done	3	NOT SIGNIFICANT	3
60	Sakshi	15	2	F	2	O	2	3/ week	2	18	11	9	15	16	Positive	1	Present	1
61	Lalit	6	1	M	1	O	2	None	1	18	12	7	14	20	Positive	1	Present	1
62	Esha	6	1	F	2	N	1	3/ week	2	20	9	7	12	19	Negative	2	Absent	2
63	Hitesh	8	1	M	1	N	1	3/ week	2	20	12	6	15	16	Positive	1	Present	1
64	Shreya	8	1	F	2	O	2	3/ week	2	19	9	9	13	17	Not Done	3	NOT SIGNIFICANT	3
65	Karan	5	1	M	1	O	2	3/ week	2	15	8	6	12	16	Positive	1	Present	1
66	Ekta	18	2	F	2	N	1	3/ week	2	21	2	4	17	17	Negative	2	Absent	2
67	Devendra	8	1	M	1	N	1	>3/ week	3	21	6	2	15	16	Not Done	3	NOT SIGNIFICANT	3
68	Chitranjan	7	1	M	1	N	1	>3/ week	3	20	10	8	16	15	Not Done	3	NOT SIGNIFICANT	3
69	Zaira	9	1	F	2	N	1	3/ week	2	19	5	7	18	18	Not Done	3	NOT SIGNIFICANT	3
70	Ojas	12	2	M	1	N	1	3/ week	2	21	3	4	118	16	Not Done	3	NOT SIGNIFICANT	3
71	Vidya	18	2	F	2	O	2	NONE	1	17	4	7	17	17	Not Done	3	NOT SIGNIFICANT	3
72	Jagdeep	12	2	M	1	N	1	>3/ week	3	17	5	5	16	8	Not Done	3	NOT SIGNIFICANT	3
73	Prateek	12	2	M	1	N	1	3/ week	2	18	9	4	16	19	Not Done	3	NOT SIGNIFICANT	3
74	Damini	13	2	F	2	N	1	>3/ week	3	18	11	8	18	20	Positive	1	Present	1
75	Chaitan	6	1	M	1	N	1	3/ week	2	18	11	6	15	17	Positive	1	Present	1
76	Lucky	15	2	M	1	N	1	3/ week	2	19	5	7	13	17	Not Done	3	NOT SIGNIFICANT	3
77	Heena	13	2	F	2	N	1	3/ week	2	19	12	7	19	19	Positive	1	Present	1
78	Meera	6	1	F	2	O	2	3/ week	2	21	8	9	16	15	Not Done	3	NOT SIGNIFICANT	3
79	Hansraj	14	2	M	1	N	1	NONE	1	20	8	4	15	16	Not Done	3	NOT SIGNIFICANT	3
80	Kastaub	13	2	M	1	N	1	>3/ week	3	18	7	4	14	15	Not Done	3	NOT SIGNIFICANT	3
81	Madhuban	16	2	M	1	N	1	3/ week	2	20	10	8	15	16	Not Done	3	NOT SIGNIFICANT	3
82	Sangeeta	4	1	F	2	N	1	3/ week	2	18	8	4	16	18	Not Done	3	NOT SIGNIFICANT	3
83	Karn	8	1	M	1	O	2	None	1	17	8	8	11	14	Positive	1	Present	1
84	Nancy	12	2	F	2	O	2	3/ week	2	20	9	4	19	16	Negative	2	Absent	2
85	Kritika	16	2	F	2	O	2	3/ week	2	18	11	7	18	19	Positive	1	Present	1
86	Qadar	14	2	M	1	N	1	3/ week	2	18	9	8	16	16	Not Done	3	NOT SIGNIFICANT	3
87	Ashish	8	1	M	1	N	1	None	1	18	6	5	16	14	Negative	2	Absent	2

88	ishita	11	2	F	2	O	2	3/ week	2	15	4	4	15	16	Negative	2	Absent	2
89	Arya	12	2	F	2	N	1	None	1	20	5	4	12	15	Negative	2	Absent	2
90	Ayushi	4	1	F	2	N	1	3/ week	2	18	8	5	16	18	Not Done	3	NOT SIGNIFICANT	3
91	Arman	5	1	M	1	N	1	3/ week	2	17	4	7	16	15	Negative	2	Present	1
92	Jaskirat	16	2	M	1	N	1	>3/ week	3	19	11	6	18	16	Not Done	3	NOT SIGNIFICANT	3
93	Faruq	8	1	M	1	N	1	3/ week	2	16	10	6	11	15	Positive	1	Present	1
94	Veenu	17	2	F	2	U	3	NONE	1	19	9	8	15	18	Not Done	3	NOT SIGNIFICANT	3
95	Nilesh	15	2	M	1	N	1	>3/ week	3	19	4	5	15	14	Not Done	3	NOT SIGNIFICANT	3
96	Rajeev	13	2	M	1	N	1	3/ week	2	17	8	9	15	15	Not Done	3	NOT SIGNIFICANT	3
97	Prekshi	8	1	F	2	N	1	3/ week	2	18	9	8	17	15	Not Done	3	NOT SIGNIFICANT	3
98	Mohd. Asmar	15	2	M	1	N	1	NONE	1	19	8	7	16	17	Not Done	3	NOT SIGNIFICANT	3
99	Farzana	13	2	F	2	N	1	3/ week	2	18	7	5	14	24	Negative	2	Absent	2
100	Sania	15	2	F	2	O	2	3/ week	2	18	10	7	19	17	Positive	1	Present	1
101	Eshutosh	6	1	M	1	N	1	3/ week	2	16	10	9	14	19	Positive	1	Present	1
102	Deepak	9	1	M	1	N	1	3/ week	2	18	11	7	19	16	Positive	1	Present	1
103	Preeti	8	1	F	2	N	1	3/ week	2	21	8	3	19	16	Not Done	3	NOT SIGNIFICANT	3
104	Abu bakar	5	1	M	1	N	1	3/ week	2	15	7	5	17	18	Negative	2	Absent	2
105	Harnoor	8	1	M	1	N	1	3/ week	2	18	10	9	12	18	Positive	1	Present	1
106	Tarun	11	2	M	1	N	1	3/ week	2	16	8	5	16	16	Not Done	3	NOT SIGNIFICANT	3
107	Bunty	6	1	M	1	N	1	>3/ week	3	20	12	9	14	15	Not Done	3	NOT SIGNIFICANT	3
108	Madhvan	16	2	M	1	N	1	3/ week	2	20	6	5	14	15	Not Done	3	NOT SIGNIFICANT	3
109	Jayshree	12	2	F	2	O	2	3/ week	2	19	5	7	16	19	Negative	2	Absent	2
110	Firoz	4	1	M	1	N	1	>3/ week	3	20	10	7	18	16	Not Done	3	NOT SIGNIFICANT	3
111	Ashish	9	1	M	1	N	1	>3/ week	3	19	6	6	17	16	Not Done	3	NOT SIGNIFICANT	3
112	Faizul	7	1	M	1	N	1	>3/ week	3	19	4	9	19	17	Not Done	3	NOT SIGNIFICANT	3
113	Tanishqa	10	2	F	2	O	2	3/ week	2	17	12	6	18	18	Positive	1	Present	1
114	Yuvan	12	2	M	1	U	3	>3/ week	3	18	10	6	13	19	Positive	1	Present	1
115	Gayatri	17	2	F	2	N	1	None	1	16	8	9	21	20	Positive	1	Present	1
116	Anita	7	1	F	2	N	1	3/ week	2	17	7	6	14	17	Not Done	3	NOT SIGNIFICANT	3
117	Damanpreet	9	1	F	2	N	1	3/ week	2	16	5	6	13	17	Negative	2	Absent	2

118	Gabbar	4	1	M	1	O	2	NONE	1	19	9	10	17	18	Not Done	3	NOT SIGNIFICANT	3
119	Vaishnavi	11	2	F	2	O	2	NONE	1	21	6	6	17	15	Not Done	3	NOT SIGNIFICANT	3
120	Tushar	12	2	M	1	N	1	3/ week	2	20	4	7	15	15	Not Done	3	NOT SIGNIFICANT	3
121	Arjun	9	1	M	1	N	1	>3/ week	3	19	5	3	16	16	Not Done	3	NOT SIGNIFICANT	3
122	Kreete	14	2	F	2	O	2	3/ week	2	17	13	6	15	16	Positive	1	Present	1
123	Kaynat	5	1	F	2	O	2	3/ week	2	17	6	4	17	16	Not Done	3	NOT SIGNIFICANT	3
124	Deepika	12	2	F	2	N	1	>3/ week	3	19	10	5	16	18	Positive	1	Present	1
125	Harleen	5	1	F	2	N	1	3/ week	2	20	3	11	13	18	Not Done	3	NOT SIGNIFICANT	3
126	Ishika	14	2	F	2	O	2	3/ week	2	19	5	7	11	21	Negative	2	Absent	2
127	Danish	8	1	M	1	N	1	3/ week	2	15	8	6	15	19	Positive	1	Present	1
128	Jamal	18	2	M	1	N	1	>3/ week	3	21	7	10	15	16	Not Done	3	NOT SIGNIFICANT	3
129	Girish	12	2	M	1	O	2	3/ week	2	16	9	3	16	22	Negative	2	Absent	2
130	Amandeep	4	1	F	2	N	1	3/ week	2	19	6	9	16	15	Not Done	3	NOT SIGNIFICANT	3
131	Dev	9	1	M	1	N	1	>3/ week	3	18	8	3	16	17	Not Done	3	NOT SIGNIFICANT	3
132	Bhagyashree	7	1	F	2	N	1	None	1	18	7	4	13	23	Negative	2	Absent	2
133	Adarsh	8	1	M	1	N	1	3/ week	2	16	11	6	13	16	Positive	1	Present	1
134	Yasmin	5	1	F	2	N	1	3/ week	2	19	7	4	18	17	Not Done	3	NOT SIGNIFICANT	3
135	Akansha	16	2	F	2	N	1	>3/ week	3	18	11	8	18	14	Positive	1	Present	1
136	Kavya	14	2	F	2	O	2	3/ week	2	16	8	4	13	22	Negative	2	Absent	2
137	Aarush	7	1	M	1	N	1	>3/ week	3	17	2	3	15	14	Not Done	3	NOT SIGNIFICANT	3
138	Hare krishan	9	1	M	1	N	1	3/ week	2	15	9	7	16	13	Positive	1	Present	1
139	Monica	9	1	F	2	N	1	3/ week	2	19	7	8	17	15	Not Done	3	NOT SIGNIFICANT	3
140	Gopal	5	1	M	1	N	1	3/ week	2	16	8	7	18	19	Positive	1	Present	1
141	Sabhya	12	2	F	2	N	1	>3/ week	3	18	6	5	14	18	Not Done	3	NOT SIGNIFICANT	3
142	Pearl	17	2	F	2	N	1	>3/ week	3	20	4	8	18	16	Not Done	3	NOT SIGNIFICANT	3
143	Jayant	6	1	M	1	O	2	3/ week	2	15	8	8	19	19	Positive	1	Present	1
144	krish	15	2	M	1	N	1	>3/ week	3	19	6	10	17	16	Not Done	3	NOT SIGNIFICANT	3
145	Richa	12	2	F	2	N	1	NONE	1	20	4	3	16	15	Not Done	3	NOT SIGNIFICANT	3
146	Chetali	6	1	F	2	N	1	3/ week	2	17	5	3	16	16	Negative	2	Absent	2
147	Nikunj	12	2	M	1	N	1	>3/ week	3	18	9	9	17	15	Not Done	3	NOT SIGNIFICANT	3

148	Sanjana	5	1	F	2	N	1	3/ week	2	15	10	10	12	15	Not Done	3	NOT SIGNIFICANT	3
149	Chanchal	17	2	F	2	N	1	>3/ week	3	17	9	6	19	16	Positive	1	Present	1
150	Hansa	12	2	F	2	N	1	3/ week	2	18	11	8	18	18	Positive	1	Present	1
151	Manan	11	2	M	1	N	1	>3/ week	3	19	9	5	17	10	Not Done	3	NOT SIGNIFICANT	3
152	Om	16	2	M	1	N	1	3/ week	2	19	10	8	17	16	Not Done	3	NOT SIGNIFICANT	3
153	Balvinder	5	1	M	1	N	1	>3/ week	3	19	2	7	13	19	Not Done	3	NOT SIGNIFICANT	3
154	Jaspreet	16	2	M	1	N	1	>3/ week	3	19	5	3	17	17	Not Done	3	NOT SIGNIFICANT	3
155	Hrithik	4	1	M	1	N	1	NONE	1	17	3	5	19	13	Not Done	3	NOT SIGNIFICANT	3
156	Paki	4	1	F	2	N	1	3/ week	2	18	5	6	16	16	Not Done	3	NOT SIGNIFICANT	3
157	Fawad	14	2	M	1	O	2	3/ week	2	16	7	7	17	21	Negative	2	Absent	2
158	Aradhya	16	2	F	2	N	1	>3/ week	3	22	3	7	16	16	Not Done	3	NOT SIGNIFICANT	3
159	Daksh	9	1	M	1	N	1	3/ week	2	19	9	9	17	16	Positive	1	Present	1
160	Priyanka	10	2	F	2	U	3	>3/ week	3	21	10	7	12	15	Negative	2	Absent	2
161	Divyam	4	1	M	1	N	1	>3/ week	3	17	6	5	6	18	Not Done	3	NOT SIGNIFICANT	3
162	Arham	4	1	M	1	N	1	>3/ week	3	22	8	7	16	8	Not Done	3	NOT SIGNIFICANT	3
163	Kavish	10	2	M	1	N	1	>3/ week	3	18	8	4	14	14	Not Done	3	NOT SIGNIFICANT	3
164	Kiara	11	2	F	2	O	2	3/ week	2	17	10	5	12	18	Negative	2	Absent	2
165	Harsh	18	2	M	1	O	2	3/ week	2	19	8	4	12	16	Negative	2	Absent	2
166	Nysa	10	2	F	2	O	2	NONE	1	19	3	9	17	17	Not Done	3	NOT SIGNIFICANT	3
167	Vishal	11	2	M	1	U	3	3/ week	2	16	8	5	11	18	Negative	2	Absent	2
168	Lakhwinder	11	2	M	1	N	1	3/ week	2	18	4	5	17	16	Not Done	3	NOT SIGNIFICANT	3
169	Chetna	7	1	F	2	N	1	3/ week	2	16	7	7	14	18	Negative	2	Absent	2
170	Jay	14	2	M	1	N	1	>3/ week	3	16	4	5	15	15	Not Done	3	NOT SIGNIFICANT	3
171	Haider	7	1	M	1	N	1	NONE	1	19	5	10	20	17	Not Done	3	NOT SIGNIFICANT	3
172	Vansh	18	2	M	1	N	1	3/ week	2	19	6	3	15	19	Not Done	3	NOT SIGNIFICANT	3
173	Anamika	5	1	F	2	N	1	None	1	19	9	5	17	20	Negative	2	Absent	2
174	Gautam	16	2	M	1	O	2	3/ week	2	17	8	5	19	19	Negative	2	Absent	2
175	Indar	7	1	M	1	N	1	3/ week	2	19	11	5	18	16	Positive	1	Present	1
176	Shanaya	10	2	F	2	U	3	3/ week	2	16	10	9	18	17	Positive	1	Present	1
177	Nikita	13	2	F	2	O	2	3/ week	2	19	10	3	20	18	Negative	2	Absent	2

178	Vishakha	18	2	F	2	N	1	>3/ week	3	21	8	2	17	16	Not Done	3	NOT SIGNIFICANT	3
179	Asmer	9	1	M	1	N	1	3/ week	2	16	13	8	19	17	Positive	1	Present	1
180	Pradeep	14	2	M	1	U	3	>3/ week	3	20	11	7	16	19	Positive	1	Present	1
181	Chandar	4	1	M	1	N	1	>3/ week	3	19	4	9	17	14	Not Done	3	NOT SIGNIFICANT	3
182	Hiten	15	2	M	1	N	1	NONE	1	18	3	7	15	17	Not Done	3	NOT SIGNIFICANT	3
183	Sonali	12	2	F	2	O	2	3/ week	2	20	6	6	15	11	Not Done	3	NOT SIGNIFICANT	3
184	Ashok	8	1	M	1	N	1	3/ week	2	17	6	7	20	19	Negative	2	Present	1
185	Dishank	5	1	M	1	N	1	>3/ week	3	18	3	9	15	17	Not Done	3	NOT SIGNIFICANT	3
186	Samar	14	2	M	1	N	1	3/ week	2	19	8	7	14	15	Not Done	3	NOT SIGNIFICANT	3
187	Harshit	16	2	M	1	O	2	3/ week	2	17	5	3	16	17	Negative	2	Present	1
188	Arun	13	2	M	1	N	1	>3/ week	3	17	12	8	14	16	Positive	1	Present	1
189	Ajay	7	1	M	1	N	1	3/ week	2	18	10	8	15	17	Positive	1	Present	1
190	Dawad	7	1	M	1	O	2	3/ week	2	17	8	4	19	22	Negative	2	Absent	2
191	Kaushal	13	2	M	1	N	1	3/ week	2	19	8	9	18	16	Not Done	3	NOT SIGNIFICANT	3
192	Bhaskar	5	1	M	1	N	1	3/ week	2	19	9	7	12	12	Positive	1	Present	1
193	Sweety	18	2	F	2	O	2	3/ week	2	17	8	8	16	21	Not Done	3	NOT SIGNIFICANT	3
194	Mahib	10	2	M	1	N	1	3/ week	2	19	3	10	15	18	Not Done	3	NOT SIGNIFICANT	3
195	Brijesh	7	1	M	1	N	1	3/ week	2	15	10	6	14	20	Positive	1	Absent	2
196	Jayesh	9	1	M	1	N	1	3/ week	2	16	8	5	18	18	Positive	1	Present	1
197	Bindu	4	1	F	2	N	1	3/ week	2	19	8	6	18	20	Negative	2	Absent	2
198	Lovey	16	2	M	1	N	1	3/ week	2	16	9	10	15	20	Not Done	3	NOT SIGNIFICANT	3
199	Maya	10	2	F	2	O	2	3/ week	2	18	7	6	14	18	Negative	2	Absent	2
200	kanhiya	12	2	M	1	N	1	>3/ week	3	18	5	6	16	17	Not Done	3	NOT SIGNIFICANT	3
201	Chandan	5	1	M	1	N	1	>3/ week	3	20	5	10	14	18	Not Done	3	NOT SIGNIFICANT	3
202	Lipika	12	2	F	2	O	2	3/ week	2	15	6	4	13	20	Negative	2	Absent	2
203	Neetu	14	2	F	2	O	2	NONE	1	15	5	3	15	18	Not Done	3	NOT SIGNIFICANT	3
204	Nimish	12	2	M	1	N	1	>3/ week	3	20	8	8	15	14	Not Done	3	NOT SIGNIFICANT	3
205	Anuj	4	1	M	1	N	1	>3/ week	3	18	10	6	18	15	Not Done	3	NOT SIGNIFICANT	3
206	Pooja	11	2	F	2	O	2	NONE	1	19	9	5	14	16	Not Done	3	NOT SIGNIFICANT	3
207	Chinmay	9	1	M	1	O	2	3/ week	2	18	8	4	18	16	Negative	2	Absent	2

208	Fateh	9	1	M	1	O	2	NONE	1	19	10	5	18	16	Not Done	3	NOT SIGNIFICANT	3
209	Fahad	12	2	M	1	O	2	3/ week	2	18	6	4	12	17	Negative	2	Absent	2
210	Samyukta	7	1	F	2	O	2	3/ week	2	18	10	5	17	17	Not Done	3	NOT SIGNIFICANT	3
211	Veena	13	2	F	2	O	2	NONE	1	18	7	4	16	16	Not Done	3	NOT SIGNIFICANT	3
212	Arfa	17	2	F	2	N	1	None	1	18	7	4	20	19	Negative	2	Absent	2
213	Harneet	19	2	M	1	N	1	NONE	1	18	4	11	14	18	Not Done	3	NOT SIGNIFICANT	3
214	Hamid	7	1	M	1	N	1	3/ week	2	17	11	8	14	21	Positive	1	Present	1
215	Ashish	7	1	M	1	N	1	3/ week	2	19	11	7	15	19	Positive	1	Absent	2
216	Anwar	8	1	M	1	N	1	3/ week	2	18	12	6	18	18	Positive	1	Present	1
217	Fawad	8	1	M	1	N	1	NONE	1	18	5	5	15	18	Not Done	3	NOT SIGNIFICANT	3
218	Pankhuri	7	1	F	2	N	1	3/ week	2	20	10	7	15	18	Not Done	3	NOT SIGNIFICANT	3
219	Pawan	15	2	M	1	N	1	3/ week	2	18	6	6	14	17	Not Done	3	NOT SIGNIFICANT	3
220	Srishti	17	2	F	2	U	3	3/ week	2	17	9	7	12	15	Positive	1	Present	1
221	Bhavesh	7	1	M	1	N	1	3/ week	2	17	10	8	16	16	Positive	1	Present	1
222	Dhairya	6	1	M	1	O	2	3/ week	2	16	9	6	13	18	Negative	2	Absent	2
223	Anshul	8	1	M	1	N	1	3/ week	2	21	9	9	15	12	Positive	1	Present	1
224	Akshat	4	1	M	1	N	1	>3/ week	3	18	5	5	16	15	Not Done	3	NOT SIGNIFICANT	3
225	Shweta	8	1	F	2	N	1	3/ week	2	18	4	8	17	16	Not Done	3	NOT SIGNIFICANT	3
226	Mahesh	18	2	M	1	N	1	>3/ week	3	21	7	4	14	10	Not Done	3	NOT SIGNIFICANT	3
227	Tanya	13	2	F	2	O	2	3/ week	2	19	10	6	17	18	Positive	1	Present	1
228	Meher	8	1	F	2	N	1	3/ week	2	19	4	6	17	16	Not Done	3	NOT SIGNIFICANT	3
229	Shreya	17	2	F	2	O	2	3/ week	2	19	11	7	16	20	Positive	1	Present	1
230	Mayank	13	2	M	1	N	1	NONE	1	18	9	6	17	14	Not Done	3	NOT SIGNIFICANT	3
231	Priya	12	2	F	2	U	3	>3/ week	3	20	9	6	12	18	Negative	2	Absent	2
232	Kavya	5	1	F	2	N	1	3/ week	2	20	10	9	18	17	Not Done	3	NOT SIGNIFICANT	3
233	Naina	10	2	F	2	O	2	3/ week	2	18	4	6	13	19	Negative	2	Absent	2
234	Alisha	5	1	F	2	N	1	3/ week	2	20	6	6	18	19	Not Done	3	NOT SIGNIFICANT	3
235	Lakshman	12	2	M	1	U	3	>3/ week	3	16	8	6	17	15	Positive	1	Present	1
236	Paritosh	10	2	M	1	N	1	3/ week	2	20	8	5	15	16	Not Done	3	NOT SIGNIFICANT	3
237	Munish	18	2	M	1	N	1	3/ week	2	19	4	6	16	15	Not Done	3	NOT SIGNIFICANT	3

238	Dinesh	9	1	M	1	N	1	>3/ week	3	20	11	6	18	16	Not Done	3	NOT SIGNIFICANT	3
239	Akhil	9	1	M	1	N	1	>3/ week	3	21	7	8	13	19	Not Done	3	NOT SIGNIFICANT	3
240	Lavet	13	2	M	1	N	1	3/ week	2	21	7	9	18	18	Not Done	3	NOT SIGNIFICANT	3
241	Faizul	7	1	M	1	N	1	3/ week	2	19	11	7	17	18	Positive	1	Present	1
242	Gagandeep	4	1	M	1	O	2	NONE	1	20	11	6	16	17	Not Done	3	NOT SIGNIFICANT	3
243	Fakar	7	1	M	1	N	1	3/ week	2	17	8	8	12	18	Positive	1	Present	1
244	Ankit	7	1	M	1	N	1	3/ week	2	20	8	6	17	11	Positive	1	Present	1
245	Madhav	15	2	M	1	N	1	3/ week	2	20	2	9	18	16	Not Done	3	NOT SIGNIFICANT	3
246	Falak	15	2	F	2	N	1	3/ week	2	17	5	7	15	21	Negative	2	Absent	2
247	Abdul	7	1	M	1	N	1	3/ week	2	18	8	3	13	14	Negative	2	Absent	2
248	Dino	5	1	M	1	N	1	>3/ week	3	19	9	5	12	15	Not Done	3	NOT SIGNIFICANT	3
249	Amol	4	1	M	1	N	1	3/ week	2	21	6	3	12	16	Negative	2	Absent	2
250	Anshuman	4	1	M	1	N	1	3/ week	2	19	10	7	16	15	Positive	1	Present	1
251	Zakir	10	2	M	1	U	3	>3/ week	3	21	9	6	15	17	Positive	1	Present	1
252	Faridha	5	1	F	2	N	1	3/ week	2	19	8	4	16	19	Not Done	3	NOT SIGNIFICANT	3
253	Farheen	16	2	F	2	N	1	None	1	20	9	6	20	19	Positive	1	Present	1
254	Mohd. Shadab	15	2	M	1	N	1	>3/ week	3	18	11	11	16	17	Not Done	3	NOT SIGNIFICANT	3
255	Bhavy	4	1	M	1	N	1	3/ week	2	18	13	9	18	17	Positive	1	Present	1
256	Simran	14	2	F	2	O	2	3/ week	2	17	10	8	14	19	Positive	1	Present	1
257	Navdeep	18	2	M	1	N	1	>3/ week	3	20	6	10	16	15	Not Done	3	NOT SIGNIFICANT	3
258	Golu	7	1	M	1	O	2	NONE	1	20	3	8	20	18	Not Done	3	NOT SIGNIFICANT	3
259	Indresh	18	2	M	1	N	1	>3/ week	3	19	9	6	18	18	Not Done	3	NOT SIGNIFICANT	3
260	Inayat	15	2	F	2	O	2	3/ week	2	18	8	5	13	20	Negative	2	Absent	2
261	Samyak	17	2	M	1	N	1	3/ week	2	21	7	8	16	11	Not Done	3	NOT SIGNIFICANT	3
262	Harman	6	1	M	1	O	2	NONE	1	19	3	9	17	15	Not Done	3	NOT SIGNIFICANT	3
263	Laila	18	2	F	2	O	2	3/ week	2	20	3	7	15	16	Negative	2	Absent	2
264	Nony	14	2	M	1	N	1	>3/ week	3	16	6	7	14	16	Not Done	3	NOT SIGNIFICANT	3
265	Rohit	13	2	M	1	U	3	3/ week	2	15	6	3	14	15	Negative	2	Absent	2
266	Balram	6	1	M	1	N	1	>3/ week	3	17	8	5	15	11	Not Done	3	NOT SIGNIFICANT	3

267	Alok	6	1	M	1	N	1	None	1	19	9	4	19	17	Negative	2	Absent	2
268	Hemant	6	1	M	1	N	1	3/ week	2	16	10	8	19	16	Positive	1	Present	1
269	Binod	9	1	M	1	N	1	3/ week	2	21	8	3	17	21	Negative	2	Absent	2
270	Manika	13	2	F	2	O	2	3/ week	2	19	4	3	18	19	Not Done	3	NOT SIGNIFICANT	3
271	Lokesh	18	2	M	1	N	1	3/ week	2	15	10	6	16	16	Not Done	3	NOT SIGNIFICANT	3
272	Gitanjali	18	2	F	2	N	1	3/ week	2	15	10	7	17	17	Positive	1	Present	1
273	Yash	11	2	M	1	U	3	>3/ week	3	15	8	8	20	16	Positive	1	Present	1
274	Kanchan	15	2	F	2	U	3	3/ week	2	15	12	5	18	19	Positive	1	Absent	2
275	Mishti	11	2	F	2	O	2	3/ week	2	16	5	4	13	15	Negative	2	Absent	2
276	Emran	8	1	M	1	N	1	3/ week	2	18	11	5	16	16	Positive	1	Present	1
277	Kareena	9	1	F	2	N	1	3/ week	2	17	7	6	18	14	Not Done	3	NOT SIGNIFICANT	3
278	Kartikay	15	2	M	1	N	1	>3/ week	3	20	9	8	14	17	Not Done	3	NOT SIGNIFICANT	3
279	Kartar	15	2	M	1	N	1	>3/ week	3	19	8	6	15	15	Not Done	3	NOT SIGNIFICANT	3
280	Honey	6	1	M	1	O	2	NONE	1	20	10	5	15	17	Not Done	3	NOT SIGNIFICANT	3
281	Gyanesh	7	1	M	1	O	2	NONE	1	20	5	4	16	16	Not Done	3	NOT SIGNIFICANT	3
282	Bhanu	5	1	M	1	N	1	>3/ week	3	21	4	10	15	16	Not Done	3	NOT SIGNIFICANT	3
283	Bablu	8	1	M	1	N	1	>3/ week	3	19	6	11	16	19	Not Done	3	NOT SIGNIFICANT	3
284	Harman	9	1	M	1	N	1	3/ week	2	17	13	6	18	17	Positive	1	Present	1
285	Geeta	12	2	F	2	N	1	3/ week	2	16	6	3	13	23	Negative	2	Absent	2
286	Samiara	11	2	F	2	U	3	3/ week	2	17	11	5	17	20	Positive	1	Present	1
287	Chaman	4	1	M	1	O	2	3/ week	2	15	5	3	14	13	Negative	2	Absent	2
288	Aman	9	1	M	1	N	1	None	1	15	2	3	14	15	Negative	2	Absent	2
289	Gagan	15	2	M	1	O	2	3/ week	2	19	4	3	14	18	Negative	2	Absent	2
290	Ajay	6	1	M	1	N	1	>3/ week	3	20	6	4	17	17	Not Done	3	NOT SIGNIFICANT	3
291	Ashi	15	2	F	2	N	1	None	1	21	8	7	11	17	Negative	2	Absent	2
292	Aarav	15	2	M	1	N	1	>3/ week	3	19	10	9	17	18	Positive	1	Present	1
293	Imran	6	1	M	1	N	1	3/ week	2	16	8	8	20	20	Positive	1	Present	1
294	Sukriti	17	2	F	2	O	2	3/ week	2	19	9	8	14	14	Positive	1	Present	1
295	Dinesh	8	1	M	1	N	1	3/ week	2	16	10	7	18	19	Positive	1	Present	1
296	Krishna	7	1	M	1	O	2	3/ week	2	18	11	7	13	19	Positive	1	Present	1

297	kabir	17	2	M	1	N	1	>3/ week	3	21	10	9	16	16	Not Done	3	NOT SIGNIFICANT	3
298	Deeksha	14	2	F	2	N	1	>3/ week	3	17	10	9	15	15	Positive	1	Present	1
299	Ankush	14	2	M	1	N	1	>3/ week	3	16	13	7	15	17	Positive	1	Present	1
300	Kanak	5	1	F	2	N	1	3/ week	2	17	8	6	14	16	Not Done	3	NOT SIGNIFICANT	3
301	Lavanya	13	2	F	2	O	2	3/ week	2	18	5	3	14	17	Negative	2	Absent	2
302	Kiran	15	2	F	2	O	2	3/ week	2	18	3	3	14	18	Negative	2	Present	1
303	Bilal	9	1	M	1	N	1	3/ week	2	16	8	8	13	19	Positive	1	Present	1
304	Divya	8	1	F	2	N	1	3/ week	2	17	8	3	15	18	Negative	2	Absent	2
305	Damodar	7	1	M	1	N	1	>3/ week	3	21	2	8	13	17	Not Done	3	NOT SIGNIFICANT	3
306	Parth	15	2	M	1	U	3	3/ week	2	17	6	3	14	10	Not Done	3	NOT SIGNIFICANT	3
307	Smriti	7	1	F	2	N	1	3/ week	2	18	5	10	14	16	Not Done	3	NOT SIGNIFICANT	3
308	aman	6	1	M	1	N	1	>3/ week	3	19	9	4	18	14	Not Done	3	NOT SIGNIFICANT	3
309	Maninder	11	2	M	1	N	1	3/ week	2	18	9	4	17	17	Not Done	3	NOT SIGNIFICANT	3
310	Anand	7	1	M	1	N	1	None	1	20	8	6	12	15	Negative	2	Absent	2
311	Kajal	6	1	F	2	N	1	3/ week	2	18	9	6	14	17	Not Done	3	NOT SIGNIFICANT	3
312	Pihu	15	2	F	2	U	3	>3/ week	3	19	3	3	13	23	Negative	2	Absent	2
313	Param	17	2	M	1	N	1	3/ week	2	19	4	8	17	20	Not Done	3	NOT SIGNIFICANT	3
314	Heer	10	2	F	2	U	3	3/ week	2	18	8	7	14	18	Positive	1	Present	1
315	Ekshita	15	2	F	2	N	1	>3/ week	3	19	10	7	19	17	Positive	1	Present	1
316	Deepanshi	7	1	F	2	N	1	3/ week	2	16	7	4	19	16	Not Done	3	NOT SIGNIFICANT	3
317	Lagan	16	2	M	1	N	1	3/ week	2	20	6	8	11	15	Not Done	3	NOT SIGNIFICANT	3
318	Pawni	18	2	F	2	N	1	>3/ week	3	21	5	9	14	16	Not Done	3	NOT SIGNIFICANT	3
319	Ibrahim	14	2	M	1	N	1	>3/ week	3	20	2	9	19	16	Not Done	3	NOT SIGNIFICANT	3
320	Chintan	8	1	M	1	N	1	>3/ week	3	19	9	7	14	16	Not Done	3	NOT SIGNIFICANT	3
321	Hina	16	2	F	2	N	1	3/ week	2	20	10	4	15	15	Negative	2	Present	1
322	Kritika	13	2	F	2	O	2	NONE	1	18	5	4	15	14	Not Done	3	NOT SIGNIFICANT	3
323	Iqra	18	2	F	2	O	2	3/ week	2	17	9	6	15	18	Negative	2	Absent	2
324	Karun	16	2	M	1	N	1	3/ week	2	20	3	7	17	14	Not Done	3	NOT SIGNIFICANT	3
325	Chaitanya	7	1	M	1	O	2	3/ week	2	19	6	6	15	17	Negative	2	Absent	2
326	Bhagwan das	4	1	M	1	N	1	>3/ week	3	20	7	4	17	9	Not Done	3	NOT SIGNIFICANT	3

327	Himanshu	6	1	M	1	N	1	3/ week	2	18	10	6	13	20	Positive	1	Present	1
328	Deepanshu	7	1	M	1	N	1	3/ week	2	17	10	8	16	17	Positive	1	Present	1
329	Sunaina	6	1	F	2	N	1	3/ week	2	20	9	5	13	16	Not Done	3	NOT SIGNIFICANT	3
330	Abhishek	6	1	M	1	N	1	3/ week	2	17	12	7	16	18	Positive	1	Present	1
331	Ishan	8	1	M	1	N	1	3/ week	2	18	12	7	19	19	Positive	1	Present	1
332	Pushpa	16	2	F	2	O	2	NONE	1	16	2	6	16	16	Not Done	3	NOT SIGNIFICANT	3
333	Lakshay	11	2	M	1	O	2	None	1	17	9	9	18	16	Positive	1	Present	1
334	Jaithra	13	2	F	2	O	2	3/ week	2	16	9	4	12	15	Negative	2	Absent	2
335	Seema	16	2	F	2	O	2	3/ week	2	21	9	7	18	20	Not Done	3	NOT SIGNIFICANT	3
336	Iqbal	13	2	M	1	N	1	NONE	1	19	4	8	17	15	Not Done	3	NOT SIGNIFICANT	3
337	Hardik	10	2	M	1	N	1	NONE	1	19	6	16	16	15	Not Done	3	NOT SIGNIFICANT	3
338	Dhriti	14	2	F	2	N	1	>3/ week	3	17	8	4	16	17	Not Done	3	NOT SIGNIFICANT	3
339	Monica	10	2	F	2	O	2	3/ week	2	17	6	7	12	22	Negative	2	Absent	2
340	Yuvika	15	2	F	2	N	1	>3/ week	3	18	7	5	16	17	Not Done	3	NOT SIGNIFICANT	3
341	Javed	8	1	M	1	O	2	3/ week	2	21	12	7	18	17	Positive	1	Present	1
342	Rajnish	18	2	M	1	N	1	3/ week	2	18	6	5	14	17	Not Done	3	NOT SIGNIFICANT	3
343	Bhoomika	13	2	F	2	O	2	3/ week	2	20	9	7	13	16	Positive	1	Present	1
344	Harshdeep	9	1	M	1	O	2	NONE	1	18	5	6	18	14	Not Done	3	NOT SIGNIFICANT	3
345	Dashrath	6	1	M	1	N	1	>3/ week	3	19	8	6	5	15	Not Done	3	NOT SIGNIFICANT	3
346	Geetanjli	11	2	F	2	N	1	3/ week	2	15	8	6	13	17	Negative	2	Absent	2
347	Kamran	7	1	M	1	O	2	3/ week	2	16	10	6	16	18	Positive	1	Present	1
348	Abhay	8	1	M	1	N	1	>3/ week	3	20	6	2	14	18	Not Done	3	NOT SIGNIFICANT	3
349	Leher	11	2	F	2	O	2	3/ week	2	16	13	9	14	19	Positive	1	Present	1
350	Huma	17	2	F	2	O	2	3/ week	2	18	6	6	12	24	Negative	2	Absent	2
351	Arman	5	1	M	1	N	1	>3/ week	3	18	2	9	15	10	Not Done	3	NOT SIGNIFICANT	3
352	Tejas	10	2	M	1	N	1	3/ week	2	19	10	5	14	18	Not Done	3	NOT SIGNIFICANT	3
353	Fareed	5	1	M	1	O	3	NONE	1	17	9	10	17	17	Not Done	3	NOT SIGNIFICANT	3
354	Anjali	18	2	F	2	U	3	3/ week	2	19	8	6	16	18	Positive	1	Present	1
355	Laksh	10	2	M	1	O	2	None	1	19	10	6	15	21	Positive	1	Present	1
356	Ishwar	16	2	M	1	N	1	NONE	1	18	6	4	16	16	Not Done	3	NOT SIGNIFICANT	3

357	Jaya	14	2	F	2	O	2	3/ week	2	21	3	4	12	21	Negative	2	Absent	2
358	Prithvi	11	2	M	1	N	1	3/ week	2	19	5	8	16	16	Not Done	3	NOT SIGNIFICANT	3
359	Charu	18	2	F	2	N	1	>3/ week	3	16	8	7	14	17	Positive	1	Present	1
360	Chintu	5	1	M	1	N	1	3/ week	2	15	12	8	16	18	Positive	1	Present	1

MASTER CHART KEY:

AGE- <10 years- 1

10-18 years-2

SEX- Male- 1

Female-2

BMI- Normal- 1

Obese/ Overweight- 2

Undernutrition-3

PHYSICAL ACTIVITY- None- 1

3/week- 2

>3 / week -3

INVESTIGATIONS- Present- 1

Absent- 2

Not Done-3

RED FLAG SIGNS- Present- 1

Absent- 2

Not Significant- 3